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ABSTRACT

The Maryland Community College Program Evaluation System is based on a quantitative review of community college program information by the State Board for Community Colleges and a subsequent qualitative assessment conducted by the individual community colleges in response to specific questions raised by the board. This document first presents the results of a statewide evaluation of the Electronics Technologies programs, followed by a section presenting the results of individual community college qualitative evaluations of 22 programs throughout the community college system. The evaluation of the Electronics Technologies programs includes descriptive information on the programs offered at all 17 community colleges in the system, an analysis of trends in enrollments and student characteristics, program performance data, results of evaluations conducted by the colleges, and recommendations regarding program offerings and improvements. For each program, the following information is provided: (1) the name of the college, the program, and the level of award; (2) responses to the board's questions concerning graduate placement and follow-up, program quality, and the causes of the identified problems; (3) actions planned by the college to remedy the problems; and (4) board recommendations. (JMC)

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1990 – PROGRAM EVALUATIONS

MARYLAND COMMUNITY COLLEGES

December 1991

Maryland State Board for Community Colleges
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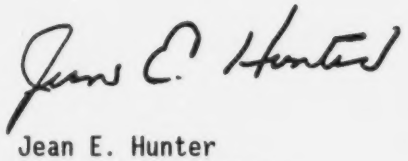
FOREWORD

In 1978, the State Board for Community Colleges approved the Maryland Community College Program Evaluation System. This system, conceptualized in 1974, is based on a quantitative review of community college program information by the State Board for Community Colleges and a subsequent qualitative assessment conducted by the individual community colleges in response to specific questions raised by the State Board. The system was developed through a cooperative effort of the Maryland community college presidents, deans, institutional research directors, faculty, and the State Board staff. The fundamental premise of the system is that Maryland's community colleges are striving to achieve program quality and the colleges have the capacity for self-assessment and the courage to take action based upon the results of such assessments.

Since the inception of this evaluation system, 586 programs have been evaluated. Many programs were improved, 110 programs were discontinued, and 12 programs are currently inactive.

In July 1991, each college received a set of questions from the State Board for Community Colleges based upon data in the Program Data Monitoring System. This document contains the results of individual community college qualitative evaluations of 22 programs throughout the community college system. Also included are the results of a statewide evaluation of Electronics Technology programs. In most cases, the efforts of the colleges went beyond the questions raised by the State Board. Full credit should go to Maryland community colleges for their efforts. The Maryland Community College Program Evaluation System is an annual process. Additional community college programs will be identified for evaluation in 1992.



Jean E. Hunter
Executive Director

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STATEWIDE EVALUATION OF ELECTRONICS TECHNOLOGY PROGRAMS

The program evaluation system of the Maryland State Board for Community Colleges is in its thirteenth evaluation cycle. The system is essentially an annual two-step process. First, all programs undergo a computer-based quantitative review built on data collected throughout the year. Programs are reviewed for such indicators as low enrollment and high cost. At the conclusion of the quantitative review, a smaller number of programs are identified for a more comprehensive qualitative evaluation to be conducted by college staff and later submitted for review by the State Board. As part of this qualitative evaluation, one program is singled out for statewide evaluation.

For the 1990 program evaluation cycle, all community colleges with Electronics Technology programs were asked to do a qualitative evaluation of that program unless the college had done a qualitative evaluation of the curriculum within the last two years. The resulting evaluations are found in the respective college sections of this report. (Note: The evaluations of the Electronics Technology programs at Essex Community College and Harford Community College were published in the 1989 evaluation report.)

Electronics Technology programs were selected for statewide evaluation in order to determine if community colleges have been able to keep pace with the rapidly changing technology of the field. In addition, the State Board saw a need to examine the current level of student interest in Electronics Technology as well as the range and scope of job opportunities for graduates of the program.

Program Descriptions

Electronics Technology Associate in Arts degree and Certificate programs are offered at twelve of the seventeen community colleges in Maryland. These programs are designed to prepare graduates to assume positions as Electronics Technicians in business, industry, and government and to enhance the technical skills of those already employed in the electronics field.

Most of the Electronics Technology programs include a "core" Electronics Technology curriculum with opportunities for students to specialize in areas that meet their particular employment needs or career objectives. For example, within the Associate degree program, students might pursue a number of programmatic options, including Telecommunications and Microprocessors. Similarly, those enrolled in the Certificate program might want to concentrate on Industrial Electronics or general basic technical skills development.

To expand the opportunities for educational mobility, within most Electronics Technology programs are clearly defined "career ladders" that increase the likelihood that students will continue their education. The "career ladder" may begin with articulated credit for coursework completed in high school complemented by a few basic advanced courses that will provide entry-level skills for immediate employment. Credits earned in these courses can be applied to the Certificate program. Similarly, all courses taken for the Certificate program will count toward completion of the Associate in Arts degree program. Graduates

may also transfer to four-years colleges and universities that offer a Bachelor of Science degree in Electronics Technology or a closely related discipline without loss of time or credit. Such an interlocking system encourages students to re-enter college after a period of employment and facilitates movement from one level of education to another. The elimination of unnecessary roadblocks in their career path coupled with the ability to earn as they learn often serves as a powerful incentive to further education.

Student Trends and Characteristics

Table 1 shows that enrollment in Electronics Technology programs have decreased substantially over the past five years. From 1986 to 1990 full-time enrollment declined 32 percent with part-time enrollment declining 19 percent, for a net total decline in Electronics Technology of 22 percent. During that period the total number of students enrolled in Electronics Technology programs has dropped from 1,987 in 1986 to 1,558 in 1990, resulting in a headcount loss of 429.

Full-time equivalent (FTE) enrollment (i.e., total credit hours in Associate degree and Certificate Electronics Technology courses) has decreased even more than overall headcount, from 575 FTE in 1986 to 345 in 1990, a 40 percent decline. The decline in FTE enrollment has, in turn, caused the cost per FTE in Electronics Technology programs to increase an average of 31 percent, as compared with a 17 percent increase for all career programs (Table 1).

Interestingly enough, the substantial decline in students enrolled in Electronics Technology programs has not been reflected in the percentage of awards that have been given from 1986 to 1990. While there was a 9 percent overall decline in awards during the five year period, the percentage of students who earned the Associate in Arts degree in Electronics Technology increased 6 percent. Certificate awards, on the other hand, decreased 31 percent from 1986 to 1990, with most of the decline occurring in the brief period from 1989 to 1990.

These data along with the enrollment differences between full-time and part-time students suggest several trends: 1) fewer students are enrolling in Electronics Technology programs; 2) among those students completing Electronics Technology programs, more are pursuing the Associate in Arts degree than the limited Certificate; and 3) students seem to be taking longer to complete all of the requirements for the AA degree program.

Table 2 provides information about the types of students who enroll in Electronics Technology programs at Maryland community colleges. To begin with, Electronics Technology students enroll at a part-time rate that is much higher than most community college programs. Specifically, for every Electronics Technology student who attends full-time, approximately four are enrolled part-time. This is in contrast to the more common one to three ratio. As might be expected, the percentage of Electronics Technology students who are new to the college is consistent with the number of full-time students. Over 80 percent of the students are returning students. In 1990, they took, on the average, 6.64 credits hours, which is almost one credit less than the majority of all community college students. As the median age for Electronics Technology students has gone

up from 25 in 1986 to 27 in 1990, the mean number of credit hours has decreased, from 7.16 in 1986 to 6.64 in 1990, suggesting that Electronics Technology programs enroll a high proportion of adult learners with home and job responsibilities.

There are two other important differences between Electronics Technology students and community college students in general that are worth noting. Eighty eight percent of Electronics Technology students are men as compared to 40 percent in community college programs as a whole. This percentage has remained relatively constant during the five year period from 1986 to 1990. The low number of women enrolled in Electronics Technology corroborates the perceptions of career and technology educators that the electronics field is still not perceived as an attractive occupational choice for women. Another significant difference is the percentage of black students who have selected this career program. In 1990 black students accounted for 22 percent of the enrollment in Electronics Technology. This percentage is four points higher than enrollment by black students in all community college programs for that same year.

Why do students enroll in Electronics Technology programs? The State Board's graduate follow-up surveys provide data on the primary reason for enrolling (Table 3). The major reason students cited for entering the Electronics Technology program was career preparation; 40 percent indicated they were preparing for a first job or for a different job than they currently held. The percentage of those who entered the program for career reasons was significantly higher than the average of 25 percent for all community college programs.

A surprising fact is that 15 percent of all Electronics Technology students listed transfer to a senior college as their primary goal. This is higher than the percentage for students in many occupational programs.

Program Performance

Data from the State Board's graduate surveys provide information about the success graduates report in achieving the goals they had set for themselves when entering the community college. Table 4 summarizes responses of 1988 and 1990 graduates in Electronics Technology programs. Ninety-four percent of the graduates in both surveys said that they had achieved their personal goal. The percentages of respondents who were satisfied with the instruction they had received in their programs were 97 percent in 1988 and 99 percent in 1990.

Table 4 reveals some specific differences between the graduates of 1988 and 1990. Sixty-nine percent of the 1988 graduates were employed in jobs directly related or somewhat related to their field of study, 75 percent began new jobs after college and the median annual salary was $23,000. Four percent of the 1988 respondents were not employed due to home responsibilities or military service and 14 percent had transferred to a four-year college. The respondents from the class of 1990 had a higher rate of employment in jobs related to their academic program (81 percent), fewer began a new job after college (46 percent), and their median annual salary was higher ($25,000). Fewer of the 1990 graduates (5 percent) had transferred, and less than one percent were unemployed because of home or military responsibilities.

The differences in responses between 1988 and 1990 underscore the fact that the overwhelming majority of the 1988 graduates were new to the electronics technology job market, whereas less than half of the 1990 graduates were seeking positions immediately after graduation. The data would suggest that many of the latter group were employed in industry-related positions as they matriculated at the community college. The high correlation between job placement, goal achievement, and satisfaction with the quality of instruction reflects high standards and commitment to quality education in the Electronics Technology programs in Maryland's community colleges.

Evaluations Conducted by the Colleges

The colleges were asked to respond to a number of specific questions in their review of Electronics Technology Associate in Arts and Certificate programs. Among these questions were the following:

- How are students using the Electronics Technology program at your college? What are their personal and educational goals?

- Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting to the SBCC a serious shortage of trained technicians. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?

- What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the college responding to these trends?

- What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?

- Does the college have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?

- Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?

- If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that be?

At four of the ten community colleges completing the statewide questionnaire, the dominant personal goals of students enrolling in Electronics Technology programs were career exploration and preparation. At four other community colleges a clear plurality were taking courses in order to update their job skills. The personal goals of students at the remaining two colleges were more varied, with preparation for transfer chosen most frequently as the personal goal.

At eight of the ten colleges most students shared the educational goal of an Associate in Arts degree. Students at the other two colleges tended to be looking for specific course offerings.

Respondents to the statewide evaluation offered a variety of reasons for the decline in enrollment in Electronics Technology programs over the past several years. Their explanations are summarized below.

1) Decreasing market demand for electronics technicians in Maryland. The Baltimore-Washington corridor has been especially dependent upon Department of Defense spending, and with major cuts in the DOD budget, many electronics firms have been adversely affected. This situation has been exacerbated by the ongoing recession which has resulted in considerable layoffs and job terminations in the electronics industry.

2) The slowing down of production. As a result, many of the larger firms have centralized electronics training within the parent company. At the same time, vacant jobs are being filled by transfer employees, thus minimizing the need for advanced skills training for the existing workforce.

3) The decline in enrollments in Electronics programs at the local high schools. Owing to dwindling student interest, some vocational centers have been forced to discontinue the Electronics program.

4) The lack of adequate preparation of high school students in the areas of mathematics and science. Many potential students choose another occupational field when they discover they must complete several developmental courses before enrolling in the college-level technical courses.

5) The poor image of technology careers in the minds of many students and parents. It is hoped that statewide initiatives to develop Tech Prep programs that include career awareness and exploration as early as the middle school level will help to change the prevailing negative

attitude of parents and students, especially in the suburban counties, towards pursuing a career in a technical field.

6) Few opportunities for students who graduate with an associate degree in a technology discipline to pursue a baccalaureate degree. There is a common belief among many prospective students that their career opportunities and potential for a good salary are lessened if they pursue an occupational program. These students are selecting more traditional transfer programs that guarantee admission to a public senior college or university at the completion of the A.A. degree.

When asked what trends are seen as most critical to the future direction of Electronics Technology programs, all respondents emphasized the need to keep up-to-date with a field that has changed drastically over the last decade. Most pointed to the current dominance of computers and computer controlled equipment within the electronics technology field and the concomitant need for graduates to have a more than cursory understanding of the software tools used in the service of electronics equipment. Most were also of the view that students needed to acquire a working knowledge of electronic and computer "systems" as well as component centered service skills to meet the demands of the continuously expanding data communications and telecommunications fields. A few predicted that laser and electro-optic technology would revolutionize the industry over the next few years and, in turn, profoundly affect the content and delivery of electronics training.

Changes in the field have already necessitated substantial curriculum modifications to include courses in microcomputers, electro-mechanical systems, fiber optics, and telecommunications. Most of the colleges have responded to the increasing requirement that all electronics students not only be computer literate, but also know the basic theories of computer interfacing and computer programming by adding more advanced computer classes to the list of required courses. Should this trend to expand the content of curriculum increase as expected, there is widespread belief among occupational faculty that the time needed to master the technical skills essential for good paying jobs will correspondingly increase. This being the case, many of the respondents were convinced that it is more important than ever for students to participate in "tech prep" programs that provide the prerequisite foundation courses in mathematics and science at the high school level.

In response to questions about student support services, academic advising, and cooperative education, all of the colleges reported that a broad range of student and academic support services are available, services such as assessment testing, tutoring, and career counseling. All of the programs have faculty advisers to help students plan their sequence of study.

Cooperative education practica are offered at most colleges for students who desire such experiences. Though not required, these work site experiences are regarded by faculty as an extremely valuable component of the program for those students who have never been employed in the electronics industry. At the same time, cooperative education provides a formal mechanism for faculty to meet employers at their businesses and learn about new developments in the field.

Although only one community college has a bona fide 2+2 program, ten of the twelve community colleges have some type of articulation agreement with the local public high schools. A number of the colleges also have articulation agreements with private career schools. Unfortunately, in most instances, the articulation opportunities are used by only a few students each year; nevertheless, colleges view them as important vehicles for high school/community college faculty exchange. When program revisions are discussed, faculty can share instructional materials as well as ideas for incorporating new competencies into the curriculum.

When asked questions about employer contacts and program advisory committees, responses were consistent among the colleges. All reported regular meetings with lay program advisory committees. In most cases, advisory committee members included employers of graduates as well as former students. Cooperative education and the involvement of industry experts in curriculum modification and evaluation were often cited as effective means of increasing contact with employers and keeping abreast of new developments in the field.

Finally, when requested to give advice on how to promote the Associate degree as an important credential for those wishing to pursue a career in Electronics Technology, the most frequent answer was that colleges should stress that the associate degree in Electronics Technology should not be looked upon as a "terminal" degree program. Several four-year colleges offer bachelor level programs into which Electronics Technology students can transfer. It is even possible to get a Master's degree in a closely related discipline. Another common response focused on the importance of general education and critical thinking skills; in a rapidly changing work environment, job retention, promotion, and career advancement will depend on the ability to adapt quickly and to solve complex problems independently. A third theme that ran throughout the responses was more global in nature: the need to market the idea to the general public, the schools, and parental groups that electronics technicians are highly skilled "professionals" critical to the future economic development of the State and the nation.

The rapid changes occurring in the field of Electronics Technology present some special challenges to the community colleges. With a view to increasing enrollment and enhancing Electronics Technology programs, the State Board for Community Colleges makes the following recommendations:

RECOMMENDATIONS

- The State Board for Community Colleges urges community colleges to emphasize career ladder opportunities in Electronics Technology. Tech-Prep programs should be developed in every region of the State to enable students to begin skills building in high school and to make the transition to more advanced college-level technical courses easily and smoothly.

- The State Board urges community colleges to aggressively promote the Associate degree. The benefits of attaining the Associate degree should be stressed not only to students but also to employers who often complain of a lack of basic communications, computational, and interpersonal skills among new employees.

- The success reported by colleges who offer cooperative education as part of the Electronics Technology program leads the State Board to urge those colleges that do not include a cooperative education option within the Electronic Technology curriculum to consider developing such an option for students who have never worked in the electronics field.

- One area of unexplored potential may be increased enrollment of female students in Electronics Technology programs. The State Board encourages community colleges to develop pilot programs with local public school authorities targeted at female high school students and to share their findings with the education community.

Table 1

ENROLLMENT, DISCIPLINE COSTS, AND DEGREES IN ELECTRONICS TECHNOLOGY PROGRAMS

	1986	1987	1988	1989	1990		% Change 1986–1990
Headcount Enrollment (Fall)							
Full-time	429	365	340	270	293		–32%
Part-time	1,558	1,546	1,476	1,392	1,265		–19%
Total	1,987	1,911	1,816	1,662	1,558		–22%
Course Enrollment and Costs (Fiscal Year)*							
FTE Students, Electronics Technology	575	556	443	411	345	**	–40%
Cost/FTE, Electronics Technology	4,209	4,560	5,002	5,503	***		+31%
Cost/FTE, All Career Programs	3,532	3,810	3,938	4,127	***		+17%
Degrees and Certificates (Fiscal Year)							
Degrees	153	145	157	136	162		+6%
Certificates	111	104	124	106	76		–31%

*Full-time equivalent (FTE) enrollment includes all students enrolled in electronics technology courses.

**Based on opening fall enrollment.

***Beginning with academic year 1989, discipline costs are collected and analyzed on a two-year cycle.

Source: Program Data Monitoring System

Table 2

CHARACTERISTICS OF CREDIT STUDENTS IN ELECTRONICS TECHNOLOGY PROGRAMS

	1986		1987		1988		1989		1990	
	N	%	N	%	N	%	N	%	N	%
Gender										
Male	1,749	88	1,704	89	1,584	87	1,471	88	1,368	88
Female	238	12	207	11	232	13	191	12	190	12
Total	1,987		1,911		1,816		1,662		1,558	
Race										
Black	372	18	309	16	344	19	341	20	340	22
White	1,463	74	1,445	76	1,319	73	1,164	70	1,077	70
Other	172	8	167	8	153	8	147	10	141	8
Total	1,987		1,911		1,816		1,662		1,558	
First-time Status										
New to college	434	22	378	20	362	20	317	19	285	18
Returning to college	1,553	88	1,533	80	1,454	80	1,345	81	1,273	82
Total	1,987		1,911		1,816		1,662		1,558	
Attendance Status										
Full-time	429	22	365	19	340	19	270	16	293	19
Part-time	1,588	78	1,546	81	1,476	81	1,392	84	1,265	81
Total	1,987		1,911		1,816		1,662		1,558	
Number of Credits										
Mean	7.16		7.25		6.74		6.59		6.64	
Age										
Mean	27		28		28		28		28	
Median	25		26		26		26		27	

Table 3

PRIMARY REASONS FOR ELECTRONICS TECHNOLOGY STUDENTS ATTENDING COMMUNITY COLLEGE

Primary Reason	Electronics Technology Students		All Other Students	
	Number	Percent	Number	Percent
Prepare for first/different job	32	40%	836	25%
Update current job skills	7	8%	192	6%
Prepare for transfer	12	15%	1081	32%
Self-enrichment	0	0%	63	2%
Explore new occupation	0	0%	113	3%
Other reason(s)	30	37%	1101	32%
Total	81	100%	3386	100%

Source: Follow-Up Survey of 1990 Graduates.

Table 4

ELECTRONICS TECHNOLOGY GRADUATES

	1988 Graduates (N = 99)	1990 Graduates (N = 81)
Employed full-time in:		
Directly related job	49%	46%
Somewhat related job	20%	35%
Unrelated job	4%	7%
Employed part-time	8%	5%
Transferred, not employed	14%	5%
Seeking work, not employed	1%	1%
Military, home responsibility, other	4%	1%
Total	100%	100%
Transferred, regardless of employment	28%	35%
Achieved goal	94%	94%
Satisfied with instruction	97%	99%
Among Full-time Employees		
Median annual salary	$23,500	$25,000
	63%	61%
Began new job after college	75%	46%

Note: Graduates were surveyed 10 months after graduation.

Source: Follow-Up Survey of Graduates.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Allegany Community College

PROGRAM TITLE: Dental Assisting

PROGRAM HEGIS NUMBER: 5202-01 LEVEL OF AWARD: Certificate

1. **The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Additional information for at least ten students from follow-up surveys of entrants and/or graduates is necessary. The surveys can be done by mail or telephone, with results presented in a table comparable to the PDM student follow-up display. Salary data are not required.**

   On April 17, in response to a request from the Maryland State Board for Community Colleges, the Institutional Research Office conducted a telephone survey of the 1988 Dental Assisting graduates. The following represents the results of that survey.

	Number	Percent
Number of Respondents	11	
Response Rate		85%
Full-time job, directly related	6	55
Full-time job, somewhat related	2	18
Full-time job, not related	2	18
Part-time job		0
Transferred, not employed		0
Seeking work, not employed		0
Military, home responsibility, other	1	9
Total	11	100%
Employed:		
Directly related and somewhat related	8	73
Transferred, regardless of employment	0	
Achieved personal goal	8	73
Satisfied with instruction in program	11	100
Among Full-time Employees:		
Began new job after college	9	82
Satisfied with employment preparation	10	91

Source: Student Follow-up Studies, 1988 Graduates

2. What factors account for the declining enrollment in this program?

	Students	Credit Hour Discipline Cost		Students	Credit Hour Discipline Cost
1976	30		1984	18	
1977	32		1985	23	
1978	26		1986	25	$138
1979	19	$169	1987	19	155
1980	13	305	1988	14	164
1981	20	144	1989	11	198
1982	14	198	1990	11	
1983	21				

Several factors have been discussed as significantly impacting enrollment in the Dental Assisting program. In Allegany County, the area graduating high school classes have steadily diminished in size reducing the pool of applicants. Dentists have become the focal point of AIDS in the national media. Every week a new story is released regarding AIDS and dentistry. All of this has compromised the overall image of dentistry as a career opportunity.

Perhaps equally important is the perceived "status" and income of the traditional dental assistant. There are more opportunities for women in the work force today and, correspondingly, qualified women are choosing other professional avenues for their life work. Assisting is perceived as a "second class citizen" occupation as well as a low pay occupation. Although income considerations have significantly improved in Maryland, graduate surveys consistently demonstrate rate-of-pay and job benefit concern. Comments from the departmental 1989 annual assisting survey of graduates regarding job disadvantages were (ranked from high to low):

- pay could be better
- health risks
- low man on the totem pole
- no benefits
- radiation and mercury poisoning
- stressful

Nationally, assisting enrollment has seen large class sizes in the early 1970's and a significant reduction from the mid 70's until the present. However, a report just released by the ADA Department of Educational Surveys shows assisting enrollment up 7.8 percent in 1990. Traditionally, demographic trends at Allegany Community College occur later than the metropolitan areas. Therefore, as one of the remaining accredited programs in the state, future enrollment <u>should</u> increase since national enrollments have increased.

3. **What is the minimum number of students needed to offer a successful program?**

Approximately and cost effectively speaking, the number is 12-14 students per year.

4. **What factors account for a discipline cost per credit hour that is much higher than the average discipline cost per credit hour at the College?**

	Dental Assisting Credit Hour Data			
	FY86	FY87	FY88	FY89
Statewide cost	$175	$161	$182	$197
ACC cost	$138	$155	$164	$198

Nationally, the offering of any dental auxiliary program is consistent with a (much) higher than average discipline cost per credit hour. Since 1988, infection control requirements alone have added approximately 10-20 percent to the cost of operation. The majority of the program's small and large equipment was purchased in 1974 with federal funds. Now this aged equipment requires significant repair and replacement funding.

Finally, there is a bottom line in any program offering where further cuts compromise the quality of the program and jeopardize Commission on Dental Accreditation standing. One faculty member has been retrenched and multiple class sections have been eliminated.

5. **What factors account for a discipline cost per credit hour that is rising much faster than the average discipline cost per credit hour at the College?**

The factor is primarily enrollment, but certainly infection control, aged equipment, and higher than normal inflation in dental supplies are significant considerations.

6. **Briefly describe how this program is administered and evaluated on your campus.**

The program is accredited by the Commission on Dental Accreditation of the American Dental Association and this accreditation is accepted by the Maryland State Board of Dental Examiners. This evaluation occurs every seven years; the next evaluation is scheduled for October 1991.

The Vice-President of Academic Affairs has the ultimate evaluative and administrative authority for Dental Assisting. The Director of Dental Programs oversees the program in terms of policy and global operation. The day to day operations are assigned to the Coordinator of Dental Assisting. Because of the imminent accreditation evaluation, the program has been undergoing intensive review and analysis for the past one and one-half years.

7. **Does your College have any articulation agreements for this program with local high schools or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?**

   There are no such agreements.

8. **This program was identified for a qualitative evaluation several years ago. What actions were carried out by the College in response to that evaluation, and what was their effect on the program?**

   The college retrenched one faculty member, supplies and repairs were properly credited to the program, and student sections were eliminated to consolidate operations. At the same time, inaugural and intensive program marketing was begun.

   The discipline costs were reduced below the statewide discipline cost average.

9. **Does the Dental Assisting program meet a clear and important need in the College's service area?**

   Of the total Dental Assisting certificates awarded in Maryland, ACC accounted for 70 percent. As of Fall 1991, the Community College of Baltimore and Essex Community College have closed their Dental Assisting programs.

   In a general sense, the college serves all of the surrounding geographic areas including the Baltimore-Washington metropolitan area as surveys have indicated that some graduates do relocate throughout the state. Specifically, the programs serves Allegany County primarily and Garrett County secondarily.

10. **What action(s) does the College plan to take to address the above issues?**

    Health care programs in general, and the ACC Dental Assisting program in particular, are expensive to operate. ACC has attempted to make its program as cost effective as possible but has reached the point where further cuts would compromise the quality of the program and jeopardize Commission on Dental Accreditation standing. The program has always been and continues to be of high quality. Consistent and positive data from students and high ratings by employers have attested to the program's quality for many years.

Once through the gargantuan administrative task of the ADA Accreditation, the only action that can improve the discipline cost is marketing of dental assisting in general and the program in particular. To this end, both the Maryland State Dental Association and the Allegany-Garrett County Dental Society have offered their expertise and cooperation. Dental Assisting enrollment has been increasing nationally and with the cooperative efforts of the professional associations, particularly the task force on dental auxiliary recruitment of the Maryland State Dental Association, enrollment should increase or, at the very least, remain stable.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Anne Arundel Community College

PROGRAM TITLE: Retail Management

PROGRAM HEGIS NUMBER: 5004-08 LEVEL OF AWARD: AA/Certificate

1. **The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Additional information for at least 15 students from follow-up surveys of entrants and/or graduates is necessary. The surveys can be done by mail or telephone, with results presented in a table comparable to the PDM student follow-up display. Salary data are not required.**

   See Item No. 5.

2. **What factors account for the drop in enrollment in this program?**

   - o Fewer students in High School DECA Programs.
   - o High School students have been able to go directly into retail businesses due to explosion of retail outlets.
   - o Two primary faculty (out of three) were not on teaching assignments and did not recruit from High School DECA Clubs. One was on sabbatical leave and the other was on temporary administrative duty.

3. **What factors account for the low number of awards for a successful program?**

   - o Our students are held in such high regard that they are recruited into the industry prior to graduation.
   - o Fewer enrollments.

4. **What does the College consider to be a minimum number of awards for a successful program?**

   - o Our success in career placements and the reputation of the quality of our students in the local retail industry is more important than the number of awards.
   - o We believe that the changes suggested later in this report will increase the number of students in the program which will ultimately increase the number of awards.

5. **Using the follow-up or admissions data, describe the goals of student who enroll in the program as follows:**

Educational Goals	Number	Percent
Courses only	10	24%
Certificate	6	14
Degree	25	60
Unknown/blank	1	2

Personal Goals	Number	Percent
Exploration of new career field	8	19%
Immediate job entry	17	41
Transfer	9	21
Upgrade skills for current job	6	14
Personal interest	0	0
Other/unknown/blank	2	2
Total	42	

Source: Office of Institutional Research

6. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

- Judges at local, state and national DECA competitions come from the private sector.
- Guest speakers from the industry.
- Supervisors for students enrolled in Co-op programs.
- Industry recruiters.
- Participants in campus Job Fair.
- Participation by faculty in the Speakers Bureau.
- Faculty contacts with management.

The Advisory Committee has not recommended any changes. It is comprised of members from: retail chains, wholesale outlet stores, past students in the program and faculty. It meets at least twice yearly. The faculty have decided after conferring with students that the "Retail Management Certificate" should include Principles of Marketing and that the name should be changed to the "Marketing Management Certificate" in order to attract more students into the program. The Advisory Committee concurred with these changes.

7. **Briefly describe how this program is administered and evaluated on your campus.**

The program is administered by the Business Management Department Head and three primary faculty members. Each course has a course outline/syllabus which includes specific requirements for student presentations with the use of various media and also requires a final exam. Most of the students participate in our DECA Club which involves local, regional and national competition. Evaluations are made by peers, faculty, DECA judges, feedback from industry, final exams and student evaluations of faculty and the content of courses.

8. **Does your College have any articulation agreements for this program with local high schools or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?**

We have an agreement with the local high schools that one year of marketing education with a 'B' average equals 3 credits of marketing at Anne Arundel Community College. The change of name to "Marketing Management," and the fact that most of the high schools have changed from retailing to marketing, should enable us to attract more students.

9. **This program was identified for a qualitative evaluation several years ago. What actions were carried out by the College in response to that evaluation, and what was their effect on the program?**

The main actions carried out since the last evaluation were the addition of the Retail Management Certificate and the introduction of the class on Retail Record Keeping. While neither of these increased the number of graduates, both actions are considered to be an improvement by the Advisory Committee. Evening class offerings did not populate due to students' work schedules.

10. **What should be the role of the Retail Management program at your community college during the next five years, considering the issue of preparation for entry-level jobs versus enhancement of skills for those already employed?**

The role of the Retail Management program is to enhance the employability of those students interested in entry level positions as well as to broaden the skills of those already employed. These goals have been achieved to a relatively high degree.

11. **What action(s) does the college plan to take to address the above issues?**

Anne Arundel Community College is in the process of changing and updating the curriculum to enhance the image of the program to the students and the addition of the class "Marketing Principles" to broaden the scope for future job requirements. The Certificate will be revised to have more emphasis on marketing.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Anne Arundel Community College**

PROGRAM TITLE: **Electronics Engineering Technology**

PROGRAM HEGIS NUMBER: **5310-01** LEVEL OF AWARD: **AA/Certificate**

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows.**

   We have examined the data from admissions forms survey which is conducted each semester by the college. Approximately 30 percent of our students are taking courses to update their skills. About 25 percent are taking classes to transfer; 19 percent are taking courses for career preparation and 17 percent are exploring new career areas. There have been no significant changes in these figures over the past five surveys.

   The students' educational goals have also remained fairly consistent since 1986. About 69 percent plan to obtain an associate degree and transfer, approximately 13 percent are enrolled in the certificate program, and 16 percent plan to take courses and transfer.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

   The trend of declining enrollments in engineering and engineering technologies is a nationwide phenomenon. In recent years industry was reporting a serious shortage in trained technicians; however, this is no longer the case. Industry today reflects a decreasing market demand for technicians. The Washington-Baltimore area has been especially dependent upon Department of Defense (DOD) spending, and with major cuts in the DOD budget our area is adversely affected. The recession has also compounded the situation as the normal cushion for technical job markets during recent periods of recession has been the dependence upon DOD budgets. However, this no longer exists.

   Some examples from our area:

   - Westinghouse Defense Systems had a major DOD contract canceled and was forced to lay off 1,200 employees, most of whom were engineers or technicians.

- o IITRI, for the first time in its history, laid off 48 engineers and technicians.

- o David Taylor Research and Development Center is facing a severe shutdown of over 50 percent of its operations.

- o The DOD and other government departments have imposed a hiring freeze. It is estimated that 60 to 65 percent of all engineers and technicians are employed by DOD or DOD-related industries. Hiring freezes also have been imposed by many of the industries in our area.

Note: It is interesting to see that Westinghouse and other industries in our area indicate that they forecast a need of engineers and technicians in the near future and are concerned about the decline of students in the pipeline. The annual "Salary Report 1990-1991" produced by Michigan State University, which was issued in the spring of 1991, projects good-to-excellent hiring prospects for engineers at record starting salaries.

Another factor which has impacted declining enrollments in the electronics technician area is the decline in electronics programs in the local Centers for Applied Technology. Of the two centers located in Anne Arundel County, one center has discontinued its electronics program and the other program has declined in enrollments to just a few students. The community college used to have a steady flow of students from the programs. Anne Arundel Community College has an attractive articulation with the Centers of Applied Technology but, unfortunately, it is seldom used.

Other factors include:

- o The lack of preparation of high school students in the areas of mathematics and science.

- o The difficulty of scheduling classes for both day and evening programs with established minimums for class size. Students experience a large number of canceled classes and become discouraged as there are no other viable courses for them to take to complete these programs. Consequently, they take technical electives in computer science or mathematics to complete their programs. This affects the retention of students in the electronics programs.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

The field of electronics has changed drastically over the past ten years. Courses in microcomputers, electromechanical systems, computer systems, telecommunications systems and fiber optics have been introduced into the curriculum as either required courses or technical electives.

The College holds annual meetings with its advisory board to ascertain the currency and relevance of its curriculum. In the spring of 1990 the College convened a DACUM (Develop A Curriculum) panel to assess the relevance of its program in Electronics Engineering Technology. The current program was validated by the panel with only a few minor recommendations.

The College also introduced a new telecommunications option to its Electronics Engineering Technology program. This program was designed by a DACUM panel and includes new courses in Network Management, Data Communications, and Systems Design as well as two new courses in Telecommunications Systems.

The College has conducted its own evaluation of the program in the fall semester of 1990, which included comprehensive data from a graduate study and a study of students who were enrolled but did not return to the program. The data showed that many of the reasons why students discontinued their studies had little or nothing to do with the program or the institution. There appears to be little difference between the reasons students withdraw from the EET program and the reasons student withdraw from the College as a whole.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

All students at Anne Arundel Community College have access to the Math Lab and the Writing Lab. We also furnish assistance in career decisions and conduct tests to help students select careers and curricula. All faculty have at least six hours of office hours per week for students to seek additional instruction. The faculty encourage students to take advantage of these opportunities for assistance. Faculty will also schedule special appointments with students if needed.

The College offers a Cooperative Education practicum for those students who desire such experiences. Not many students participate in the coop program, but all are encouraged to do so if they can. A large majority of the EET students are already working in related fields. Three academic credits earned in an engineering practicum may be used as a technical elective in the EET curriculum. The cooperative education experience has in all cases been evaluated as an extremely valuable component of the students' education.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

Formal articulation agreements in electronics have existed with the Anne Arundel County public schools since 1986. High school students who complete Electronics I and II in high school can get credit for three college courses for a total of ten credits. Very few students have taken advantage of the agreement. Notices have been circulated to the public schools on all the articulated programs which exist at the College. With the demise of the Electronics program in the Centers of Applied Technology, the articulation in Electronics has not been utilized over the past two years.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The Electronics Engineering Technology program is administered by a department head with six faculty load hours of released time, which is 40 percent of his full-time load. Support is also provided by the Division Chair who normally is totally dedicated to the administration and management of the seven division programs.

All division programs are periodically reviewed for quality and currency. Because of the declining enrollments in the Electronics Engineering Technology program, a comprehensive review was conducted during the Spring 1990 semester and the Fall 1990 semester. A special DACUM (Develop A Curriculum) panel was convened in May 1990 to ascertain the validity of the program. The panel produced exactly the same program which we now administer and verified the content of the existing program as meeting the needs of industry.

The most recent graduate follow-up study (1988) indicated that the College EET program received favorable ratings when compared to peer and State ratings. One hundred percent of Anne Arundel students responding stated they would probably or definitely choose the College again. Student evaluations are also administered at the end of each class and are carefully read for student reactions.

Professional development activities are encouraged, but budgetary constraints prevent extensive use of available activities. Each faculty member is authorized a maximum of $1,000 for professional development activities, including tuition or fees. However, travel, room and board are not included. Occasional industrial tours are arranged for faculty and/or students and special work sessions have been held for the faculty with specific industries. It is difficult for faculty to participate in conferences during the school year.

Overall, professional development activities have been good with adequate representation in professional societies, conferences and workshops. It must be noted, though, that in a two-year, lower division curriculum much of the material is basic to the discipline and does not need to reflect state-of-the-art technology. A great deal of updating is accomplished through the use of new textbook editions and review of current technical publications.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

Many contacts have been made with employers about the Electronics Engineering Technology programs. Brochures and schedules have been distributed to over 400 organizations. Special fliers are also distributed on course offerings.

All EET faculty were asked to participate in a recent half-day workshop/tour at Westinghouse Defense Electronics Division. An interesting panel discussion was held with Westinghouse engineers and technicians to help define their needs and our programs.

In May 1990 a special DACUM was convened, made up of members of the Electronics Technology advisory committee. Persons serving on our advisory committee are from the following organizations:

Westinghouse Defense Electronic Division
ARINC Research Corporation
David Taylor Naval Research Center
IIT Research Institute
Anne Arundel Trade Council
Kennecott Refining Corporation
Honeywell, Inc.
Ford Aerospace Corporation
National Security Agency (DOD)

The extensive DACUM, starting from scratch, defined what the panel members felt was the needed program in Electronics Technology. The end result was a program identical to the existing program.

The advisory board is scheduled to meet again on May 9 to review the program and assist in marketing of the program.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

Students need to be aware that the two-year associate degree in Electronics Technology is no longer a two-year career program which ends with the associate degree. Opportunities exist for students to continue their education into bachelor's degree programs in Electronics Technology as well as in Electrical Engineering. Several students have even obtained a master's degree in Computer Science or Electrical Engineering,using the EET associate degree as their starting point. There are no limits on today's technical degree.

At the same time students also need to know that they can obtain employment as associate-degreed technicians, especially in the service industries. Many larger electronics industries, such as Westinghouse, seem to be putting more emphasis on the bachelor-degreed technician than on the associate-degreed technician. Westinghouse has indicated that the need for the two-year-degreed technicians is dwindling and that they will hire them only if they are pursuing a bachelor's degree.

This makes it even more important that the technical programs are transferable to four-year programs. It also points out the need for bachelor's degree programs in the technologies in a public college located in the Baltimore-Washington area.

9. What action(s) does the College plan to take to address the above issues?

The College will make efforts to promote the electronics and telecommunications option to advise students of available careers based on identified industry needs. Careful monitoring of enrollment trends and work force needs may result in a future College decision to downsize faculty or to eventually discontinue the programs if future enrollment does not sustain the cost.

Anne Arundel Community College has taken a number of positive steps to address the EET enrollment issue.

- Three new Special Topics courses have been introduced for the Fall semester in the area of electronics. (Assembling and Troubleshooting Microcomputers, Computer-Aided Electronic Drafting and Printed Circuit Board Layout, and Linear Integrated Circuits with Applications).

- A continued involvement between industry and Engineering faculty is planned. A formal coalition with industry has been established and will be aggressively utilized during the next year.

- Programs will be established with high school students to participate in after-school activities which will include a practical orientation in engineering and electronics.

- A summer program for minorities interested in engineering career areas will be held at the college.

- A program for high school students will be conducted during the summer of 1992 in the high-tech areas.

- An orientation on high-tech careers will be presented to twenty high school teachers during the summer of 1991. Fifty teachers will also participate in a special orientation at Westinghouse Defense Electronics Division during the summer of 1991.

- The College has introduced a telecommunications option to its electronics curriculum.

- The College plans to continue its assessment of the program and its career potential.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Catonsville Community College**

PROGRAM TITLE: **Printing Management Technology**

PROGRAM HEGIS NUMBER: **5009-01** LEVEL OF AWARD: **AA/Certificate**

1. **The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Additional information for at least 15 students from follow-up surveys of entrants and/or graduates is necessary. The surveys can be done by mail or telephone, with results presented in a table comparable to the PDM student follow-up display. Salary data are not required.**

   A survey of students was requested with at least 15 students to be samples. Thirty-eight currently enrolled students were surveyed. The results are as follows:

Response	Number	Percent
Employed, full-time	29	76
Employed, part-time	4	10
Unemployed	5	13
Program directly related to job	23	68
Program somewhat related to job	4	12
Program unrelated to job	7	20

Job Titles Indicated

Assistant Plant Superintendent	Print Marketing Specialist
Electronic Publication Designer	Graphic Artist
Pressman	Production Process Specialist
Production Control Specialist	Traffic Manager
Systems Manager	Machine Tooler
Cameraman	Account Manager
Systems Operator	Production Manager
Food Server	Machine Operator
Security Officer	Crypto Material Worker
Teacher	Picker/Packer
Pre-Press Supervisor	

Program Satisfaction

Extremely satisfied	26	68
Satisfied	12	32
Dissatisfied	0	

2. What factors account for the declining enrollment in this program?

In the fall of 1986, student enrollment in Printing Management Technology (PMT) classes was 111. During the intervening years there was an enrollment decline, which bottomed in 1989 with a 66 student enrollment. There was a rebound experienced in 1990 with 84 students enrolled in printing courses.

Enrollment in the program for the fall of 1986 through 1990 is as follows:

Fall semester	1986	1987	1988	1989	1990
Enrollment	111	101	92	66	84

Two explanations emerge. First, some PMT students currently take courses in Computer Graphics (CGR) as well as Printing Management. For example, PMT 131 (Digital Desktop Typesetting) has been replaced by CGR 101 (Introduction to Computer Graphics). Printing students now have two additional CGR courses required in their curriculum. As a result, PMT students take more courses that have no PMT designator and do not appear in enrollment figures. The number of declared majors has dropped only from 59 in the spring of 1987 to 54 in the spring of 1991.

Second, in recent years the College has attempted to meet the needs of Printing Management Technology students in a variety of ways. The Occupational Training Center, for example, now enrolls students in Printing and provides hands-on training. The Printing Industries of Maryland has a working agreement with the continuing education program, which provides noncredit training.

In addition, our Continuing Education program offers a printing apprenticeship program in a Maryland Division of Correction facility (45-50 apprentices), and provides on-site training to industry (for example, Sweetheart Cup Corporation--30 to 35 pressmen and Port City Press--35 to 50 trainees). As a result, the College offers three options to students interested in printing instead of one. The combined credit and noncredit enrollment is over 300 students.

3. What factors account for a discipline cost per credit hour that is much higher than the average discipline cost per credit hour at the college?

The next HEGIS report will more accurately reflect the cost per credit hour. The College's Office of Institutional Research reports that the discipline cost is less than it is for the average discipline as well as lower in cost than for similar program at other institutions. Previously, the entire salary of the full-time Printing instructor was included. This instructor teaches in other disciplines as well.

4. **Enrollment in this program is almost all part-time. Does this situation pose particular implications for scheduling, advisement, and services for students?**

   Because most students are part-time, the majority of our course offerings are in the evenings at times convenient to the students. It also means that our full-time faculty teach in the evenings in order to provide the necessary advisement.

   Students in this curriculum have access to the same services available to students in other programs.

5. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

   The advisory committee consists of people in the printing industry, some of whom teach part-time in the program. Committee members represent a wide range of printing organizations and some serve as printing consultants. The committee is currently being reorganized to reflect changes in the curriculum since the advent of the Computer Graphics program and development of the noncredit offerings. The committee has not met within the last year.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

   The program is administered by the full-time program coordinator. The coordinator makes periodic visits to printing establishments and attends conferences and exhibits to remain current with developments in the field.

7. **Does your College have any articulation agreements for this program with local high schools or governmental agencies? What are the strengths and weaknesses of such arrangements?**

   The program has articulation agreements with area public school systems including Baltimore, Anne Arundel and Howard counties. The articulation agreement between the Baltimore County Community Colleges and the Baltimore County Public Schools has been in effect only for this past year so it is too early to comment on its effectiveness. Up to this point, few students have taken advantage of the agreements because the program is designed primarily to teach management skills, not hands-on training, although some of the latter is included.

8. **This program was identified for a qualitative evaluation several years ago. What actions were carried out by the college in response to that evaluation, and what was their effect on the program?**

The SBCC last evaluated this program in 1986. The focus of that evaluation was on the decline in enrollment. This concern is addressed in question No. 2.

9. **What should be the role of the Printing Management Technology program at your community college during the next five years, considering the issue of preparation for entry-level jobs versus enhancement of skills for those already employed?**

The Printing Management Technology program will likely continue to provide services both for students entering the job market and those employed in the field. The integration of computer graphics and desktop publishing in the printing industries will mean that the curriculum will change further in the years to come. The College believes that our three-stage approach--credit, noncredit and JTPA programs, as well as the prison program--will keep pace with both industry and student needs.

10. **Make a value judgment about the quality of the program. Is program quality low? Satisfactory? Excellent?**

Value judgments are usually made on the basis of the number of graduates. We believe that the basis of such judgments should be in terms of enabling students to achieve their goals. In that regard the program is successful.

The College considers the program to be very high in quality. The College will continue to strengthen the program by working with the printing industry to insure the training provided keeps pace with changing technology.

11. **What action(s) does the college plan to take to address the above issues?**

As noted in the answers to questions 5 and 10 above, the College is working with the advisory committee and industry representatives to assure the curriculum is kept up-to-date and meets the needs of local employers. The College believes it has made considerable strides in both credit and noncredit areas in improving the program to meet the needs of both the students and the industry.

In addition, the College is promoting and monitoring the progress of the articulation agreement between the Baltimore County high schools and the College. The College and the high school curriculum coordinators and faculty evaluate the program yearly to recommend updates or changes.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Catonsville Community College

PROGRAM TITLE: Electronics Technology

PROGRAM HEGIS NUMBER: 5310-01 LEVEL OF AWARD: AA/Certificate

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows:**

Personal Goals	Number	Percent
Exploration of new career field	118	14
Immediate job entry	202	24
Transfer	157	18
Upgrade skills for current job	185	22
Personal interest	35	4
Other/unknown/blank	157	18
Total	854	

Educational Goals	Number	Percent
Courses only	124	15
Certificate	146	17
Degree	427	50
Unknown/blank	157	18
Total	854	

Source: Application for Admission (personal goals) for students enrolled in the electronics technology curriculum over the past four years. Registration form (educational goals) for students over the same period.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

There has been a steady decline in enrollment in the Electronics Technology program at Catonsville during the last four years. In the past, electronics technology related employment in Central Maryland has been primarily in defense related industries. Large companies such as Westinghouse's Defense Electronics Center, as well as its subcontractors, have experienced budget cutbacks with resulting hiring freezes. Fewer jobs are available in the local defense industry for graduates of the traditional electronics technician preparation programs.

Two-year technical curricula suffer from the same stigma that affects high school vocational programs. There appear to be fewer opportunities for students who graduate with an associate degree in a technology discipline to pursue a four-year degree. Therefore, there is a belief by some prospective students that their career opportunities and potential for a good salary are lessened with a career program AA. Curricula offering good transfer opportunities to a four-year program are being selected.

Another important factor that has affected employment as an electronics or computer service technician is improved product reliability. Hardware repair and routine maintenance of new electronic equipment is less frequent due to improved quality of the instruments. Field service organizations are reporting fewer "trouble calls" for hardware service. The typical electronics technology curriculum emphasizes hardware repair and maintenance. However, there is a need for more software "service" of computer related equipment. Individuals prepared to maintain these specialty instruments, in some cases, need more software and less hardware service training. In many cases they can be employed with less traditional electronics theory and more software related education.

Our advisory committee insists that there remains a need for well-educated technicians who have in-depth knowledge and skill in hardware repair. However, the committee concurs that the electronics technology programs should include additional software related subjects.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

The proliferation of computers and computer controlled equipment will continue to dominate the electronics technology field. There will continue to be a need for certificate and AA graduates to have a better understanding of software tools in the service of electronic equipment. The ever expanding data communications and telecommunications electronics fields will require students to have knowledge of electronic and computer "systems" as well as component centered service skills.

Another area that is revolutionizing today's industry is laser and electro-optic technology. Applications using these technologies are employed in manufacturing, materials processing, biomedical systems, and communications.

The increasing complexity of the electronics field will require graduates to complete more technical courses. The addition of software skills, data communications concepts, and more specific electronics technology, as well as a good general education, necessitate that greater time be allotted to study in this discipline. This could be accomplished through a four-year baccalaureate program or a "tech prep" arrangement where fundamental courses are taught in the secondary schools or deemed remedial (prerequisite) courses by the college.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

   The College offers a wide array of academic and support services to students enrolled in the Electronics Technology curriculum. Academic support services are available to both day and evening students through tutors and developmental education courses. Academic advisement by Electronics Technology faculty is required for all degree and certificate seeking students. This system provides students with curriculum-specific information and advice regarding their career in the field. This advice is also available to non-degree seeking students.

   Other services are available through Student Personnel Services, including financial aid counseling, and the Career Planning and Placement Office. The latter coordinates job fairs, job seeking advice and posts jobs available in the area.

   Cooperative education experiences are elective courses in the second year of the Electronics Technology curriculum. Few students have taken advantage of this option. Many students enrolled in the program are already employed in some aspect of electronics technology which makes a cooperative education course unnecessary to pursue.

   Services available, both academic and support, are viewed as excellent by the faculty and staff.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

   The College has in place a carefully prepared and annually reviewed articulation agreement with the Baltimore County Public Schools. This advanced placement arrangement allows students graduating from the technical (vocational programs) or comprehensive (technology education) high schools to bypass introductory courses upon recommendation from representatives of the high school and a minimum grade of B in the completed technical courses. Very few students have taken advantage of this opportunity. It is assumed that students change their career goals upon graduation or go directly to the electronics industries to be trained on-the-job.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The Electronics Technology curriculum is housed within one of Catonsville's five major academic divisions, Technical Studies. Within this unit are all engineering technologies and computer/data processing programs. Evaluation of the program takes the form of an instructional unit's internal qualitative review every several years and annual student evaluations of instruction.

Professional development opportunities are available to all faculty through campus-wide staff development and statewide activities. Both have been used by Electronics Technology faculty over the past several years. Courses taken include those that address improving the teaching/learning environment within the classroom through the Center for Teaching Excellence and technical updating.

During the past year the College has hosted two statewide activities, one teleconference "Electronics Technology in the 90's" and a one-day workshop for faculty "Electronics Technology Training in the 90's" (sponsored by MSDE/DCTE).

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

The Electronics Technology advisory committee is comprised of representatives of major electronics firms, public school teachers, state agencies and equipment vendors in Central Maryland. The group meets annually to discuss curriculum and other matters. At its most recent meeting (April 1991) the committee discussed, in addition to the need for more advanced electronics technology to be taught, an emphasis on computer programming, current employment opportunities and future trends in this field.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

Employers insist that their new employees have good communications skills (writing and speaking) as well as being technically competent. The colleges should continue to promote AA degree completion as a necessary first step to success in the electronics technology field. Employers that agree should be encouraged to set the AA as the minimum credential for entry level and discourage hiring without having completed the general education component of the curriculum or set the AA as a minimum requirement for the first promotion.

9. What action(s) does the College plan to take to address the above issues?

Despite declining enrollments there are nearly 200 students declaring Electronics Technology as their major. Those successfully completing the associate degree or certificate programs are finding no difficulty obtaining employment as an electronics technician or in some electronics related field. The program continues to offer a sound base in fundamental electronics technology and a strong general education core. The College will, however, work to include more computer programming experiences to provide students with the software skills suggested by the advisory committee.

In addition, the College will continue to recruit recent high school graduates into the program through visitations and open house activities that will provide them with more information to make their career program selection. The articulation agreement will be promoted to encourage students to take advantage of advanced placement opportunities in electronics technology.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Cecil Community College**

PROGRAM TITLE: **Electronics Technology**

PROGRAM HEGIS NUMBER: **5310-01** LEVEL OF AWARD: **AA/Certificates**

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows:**

A total of 21 students registered as Electronics certificate and associate degree majors into the spring of 1991. As noted below, 43 percent were seeking a certificate and 52 percent expressed the goal of achievement of the associate degree. Personal goals of this group of students were mixed fairly equally among new career exploration, immediate job entry and transfer. Only 9 percent of the group took classes to upgrade current job skills.

Personal Goals	Number	Percent
Exploration of new career field	7	33
Immediate job entry	6	29
Transfer	5	24
Upgrade skills for current job	2	9
Personal Interest	0	0
Other/unknown/blank	1	5
Total	21	100

Educational Goals	Number	Percent
Courses only	1	5
Certificate	9	43
Degree	11	52
Unknown/blank	0	0
Total	21	100

Source: Student Registration Forms.

The second table gives an average of the same information for all Electronics certificate and degree (majors) students since the beginning of the program. Trends show that the number of transfer students in 1990-91 was higher than the overall average, and that the number of students not seeking a degree and taking only courses in 1990-91 was less than over the previous years.

Personal Goals	Number	Percent
Exploration of new career field	101	37
Immediate job entry	60	22
Transfer	34	13
Upgrade skills for current job	39	14
Personal interest	24	9
Other/unknown/blank	12	5
Total	270	100

Educational Goals	Number	Percent
Courses only	48	18
Certificate	99	37
Degree	122	45
Unknown/blank	1	0
Total	270	100

Source: Student Registration Forms.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

Over time, the number of Electronics majors taking classes at Cecil to upgrade job skills for current employment has declined. In Cecil County, small shops account for the majority of the electronics employers in the area and cost containment has been stated by these employers as one factor in the training of their employees. In lieu of sending the employee to the college for classes, the employers have been selecting internal in-service to provide their employees with necessary new skills. Additionally, the employers have stated that in-house training provides greater flexibility with respect to time; that is, the necessary skills can be provided to the employee over a several day time period rather than a several month time period, as in a traditional semester.

The College has also experienced an increase in the number of new Electronics students requiring developmental math courses prior to entry into the Electronics curriculum. Attrition is high in this group of students, and although they may express program interest, many are unsuccessful in completing the basic math needed to enter the Electronics curriculum.

Currently, the College offers academic support and tutoring through the campus math lab, as well as VSST services and tutoring for the Electronics courses themselves. Due to the fact that the majority of the Electronics students are older, mature students, little else can be provided to assist them through the developmental course work.

Future students coming to the College from high schools in Cecil County should have an advantage due to the recent creation of a Tech Prep curriculum for Electronics. The target date for institution of this program in the county school system is the fall of 1991. Additionally, plans are underway to articulate the high school and College electronics programs and examine ways to determine advanced placement status for high school electronics graduates.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

In 1990, the College performed a DACUM on the Electronics program. The industry participants provided the College with input on the following key trends in the electronics field:

- Schematic reading
- Soldering
- Frequency, network and signature analyzers

The College has purchased one soldering station and is currently incorporating schematic reading and soldering into the existing curriculum. Discussion is underway as to whether or not a separate course should be created to focus on these skills.

Due to cost, the College is limited in the ability to teach skills related to frequency, network and signature analyzers. Investigation is underway to attempt to borrow or rent necessary equipment from vendors, or arrange field trips to view the use of these analyzers in industry.

Currently, the associate degree program and the courses offered in the certificate and associate degree program are under revision to reflect the changes suggested by the DACUM panel. The revisions will be completed in the fall of 1991. Course changes will be instituted by the spring of 1992, and program changes will be submitted to SBCC by the spring of 1992 for institution with the fall 1992 class.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

Students enrolled in any course at the College can avail themselves of the tutoring and academic support services provided by the campus English and math labs. There is no charge to the student for unlimited assistance at either lab. Additionally, the College offers classes in reading and study skills and college success strategies. Last, Electronics tutors are available through VSST to provide individual or group tutoring on a weekly basis at the student's request.

The Electronics program offers students a cooperative education experience; however, the current program does not require students to participate in the experience to complete certificate or degree requirements. Several Electronics students have taken the College Based Work Experience Program (CBWEP) and have expressed satisfaction with their experience. The program is coordinated by a Careers faculty member who supervises students throughout the process, provides a related seminar to assist students with conquering the challenges of a work place experience, such as interviewing, time management, etc., and monitors the achievement of the student's objectives for the experience. Electronics faculty members provide input into the student work objectives, the evaluation process and the work setting. The coordinator handles the follow-up with the work site and related CBWEP program evaluation and paperwork. Faculty find the CBWEP experience to be highly valuable in solidifying student competencies.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

In April of 1991, plans were finalized to develop a Tech Prep curriculum for electronics in the county school system. Administrators and electronics faculty at the high school and college worked together to develop a coherent sequence of courses from grades 9-12 which would prepare high school students to enter the Electronics curriculum at the College immediately after high school graduation. Since the program is new, the College will not have the opportunity to work with any of the students from this program for two to four years.

Plans exist to work on articulating the high school and college Electronics curriculum. The county has a request for a Tech Prep grant to assist with this activity. If the grant is awarded, work on course dovetailing and development will commence in the fall of 1991.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

There are two faculty members who teach the Electronics curriculum, one primarily day and the other primarily evening. The program is supervised under the Careers Division of the College and is evaluated by the same standards as other career programs. Areas evaluated include number of students, number of graduates, cost per discipline, FTE generated, student satisfaction with the program, and community need for the program.

Professional development opportunities are provided to the Electronics faculty through College financial support of continuing education workshops and tuition reimbursement for credit course work. Additionally, faculty have taken advantage of DCTE supported updates. Both faculty have attended at lease one workshop each for the last two years.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

As mentioned previously, the Electronics program underwent the DACUM process this past year. Local employers were part of the DACUM panel and provided input on the national trends and regional needs necessary for a sound Electronics program.

The advisory committee met twice this past year and included representatives from six organizations/employers. Types of organizations represented by the members included large manufacturing industries, a large government medical center, a computer supply company, a community college, and a private consulting firm.

Recommended changes are being incorporated into the curriculum.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

One important factor in promoting the AA degree would be to encourage employers to view the person holding the degree as more promotable within the organization. Graduates of the degree program should have greater problem solving and critical thinking skills than non-degree graduates, and those students who have selected the cooperative education experience offer the employer a demonstrated, although admittedly limited, track record of work behavior.

9. **What action(s) does the College plan to take to address the above issues?**

The College will continue to support the concept of Tech Prep within the county and will work on the articulation of high school and college curricula. Additionally, the program and course revisions to the college program suggested by the DACUM process will be completed.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Charles County Community College

PROGRAM TITLE: Electronics Technology

PROGRAM HEGIS NUMBER: 5310-01 LEVEL OF AWARD: AA/Certificate

1. How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows:

Personal Goals	Number	Percent
Exploration of new career field	20	17
Immediate job entry	22	18
Transfer	27	22
Upgrade skills for current job	39	32
Personal Interest	6	5
Other/unknown/blank	7	6
Total	121	100

Educational Goals	Number	Percent
Courses only	15	12
Certificate	24	20
Degree	72	60
Unknown/blank	10	8
Total	121	100

Source: Student Data System, Spring 1991 Enrollment.

Over half of the students in the Electronics Technology program at CCCC are using the program to enhance their careers or prepare for transfer. Most of these students are working at full-time jobs and an estimated 30 percent are already employed as electronic technicians. The recent high school graduates are using the program to explore the possibility of a career in the electronics field.

It is hoped that with the Tech Prep program recent high school graduates will enter the program with a better understanding of the electronics field and perhaps even advanced standing through their high school coursework.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

   Enrollment has increased 16 percent over the past three years with a current enrollment in the Spring of 1991 of 121 students in the certificate and degree programs. While this represents a modest increase, the college recognizes that many of these students are already working in the field and that entry level graduates are needed to meet the trained personnel shortage needs in the area. This objective will be achieved through additional marketing methods targeted at recent high school graduates.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

   While the fundamental concepts in the field remain relatively constant, specific electronics courses are updated regularly to integrate changes in technology. The College utilizes the DACUM (Developing A CUrriculuM) process to regularly determine the needs of local industry. A DACUM panel was convened in February of 1991. Specific recommendations resulting from this DACUM were to incorporate cooperative education courses into the programs in order to assure students workplace experience. The faculty also learned that increased time should be allocated for soldering techniques. These changes will be incorporated into the program.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

   Students have access to tutorial assistance through the Learning Assistance Center, faculty assistance in the department, and advisement through the Student Development Department. Specific tutoring in electronics is available through a College alumni who works with individual students. Co-operative education is currently an elective in the program; however, the faculty believes that the co-op course offers a rich opportunity for student learning and should be a requirement for the student who lacks related work experience.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

Articulation agreements are in place with two of the three county public school systems in the service area and such an agreement is under consideration with the third system. Of those students who have received advanced standing through these agreements, most have been very successful and have gone on to challenging electronics positions. Unfortunately, only a few high school students have taken advantage of these articulation agreements. The Tech Prep (2+2) program will improve marketing of these programs by exposing students to earlier career decision-making, and therefore improve understanding of the opportunities articulation provides.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

This program is administered by the Technical Studies Department in the Division of Career and Technical Education. It is monitored annually and is evaluated every five years according to the College's established program review process. Recent participation in faculty development includes a two-day visit by a faculty member to the Milwaukee Area Technical College to observe individualized instruction strategies for electronics students. That instructional strategy is being considered for this college. A second unique faculty development activity is a "return to industry" experience for one faculty member during which he consults with local businesses in the technical area. In addition, faculty have analyzed new teaching methodologies using interactive software.

College faculty would appreciate an opportunity semi-annually to meet with colleagues from other colleges to share experiences that are worthwhile and changes that have been made. A vehicle for such meetings may be Association For the Advancement of Community College Teaching (AFACCT).

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

Through the cooperative education program and career services department at the college, contacts have been made with local employers about the program. The DACUM panel involved a number of employers. The program advisory committee met in October of 1990 and basically affirmed the current program. They will meet again in the Fall of 1991 to review the new DACUM chart. The advisory council is comprised of a variety of technical employers from the tri-county and metropolitan area.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

   Consider strengthening linkages with public school systems so that students understand the opportunities available in the electronics field and are prepared for postsecondary education.

9. **What action(s) does the College plan to take to address the above issues?**

   The College plans to strengthen faculty development in electronics technology; continue to involve employers in program development and monitoring; expand cooperative education opportunities; provide state-of-the-art equipment; seek external funding to supplement local resources in order to maintain program quality; and pursue the development of the Tech Prep program through the Southern Maryland Educational Consortium.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Chesapeake College**

PROGRAM TITLE: **Electronics Technology**

HEGIS NUMBER: **5310-01** LEVEL OF AWARD: **AA/Certificate**

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals?**

Personal Goals	Number	Percent
Explore new field	5	25%
Immediate job entry	2	10
Prepare for transfer	6	30
Update job skills	5	25
Personal interest	2	10
Other/unknown	0	0

Educational Goals	Number	Percent
AA degree	12	60%
Certificate	8	40
Letter of Recognition	0	0
Take courses	0	0
Other/unknown	0	0
Total	20	

Source: Fall Enrollment Files (Admission Application)

Among the 20 students enrolled during Fall 1990 in Electronics, six (30 percent) reported their major goal was to prepare for transfer. Five (25 percent) reported they were exploring a new field and another five (25 percent) reported they were updating job skills. Two of these students (10 percent) reported they were preparing for entry into a new job. The personal goals of students in Electronics are quite similar to those of other students at Chesapeake.

In Fall 1990, 60 percent of the students reported they were pursuing an AA degree and 40 percent were pursuing a Certificate. The educational goals of students in Electronics are more likely to be on obtaining a degree than those of other students at Chesapeake College.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

Like many of the other Electronics programs around the State, the Electronics program at Chesapeake is also suffering from a decline in credit enrollment. Two factors contributed to this decline. The first is an economic situation; the second is a decline in the traditional student population in the secondary schools.

The largest single employer of electronics technicians in the five counties supported by Chesapeake College is Airpax, a division of North American Phillips Corporation. This firm is located in Cambridge, Dorchester County. To save costs and improve profitability, the firm decided recently to relocate approximately 80 percent of its assembly-line functions to Mexico. In other local firms, production has slowed and many of the larger firms have centralized the function of electronics training to the parent company or company-sponsored training outside the local vicinity.

Jobs in the area are being filled to some extent by transfer employees, thus minimizing the need on a temporary basis for advanced skills training among current employees which, in the past, was conducted by Chesapeake College.

Students enrolled in high school programs were a source of postsecondary enrollments in electronics in years past. A recent decline in the secondary student population in the Electronics program has adversely impacted on our program recruiting efforts.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

The electronics field is rapidly expanding and experts agree that electronics technology is part of other technical areas. For example, high-tech electronic circuits are expected to constitute 80 to 90 percent of all hydraulic systems in the near future. Digital devices, microprocessors, lasers, fiber systems etc. are revolutionizing the fields associated with auto repair, aviation mechanics, heating, air conditioning, ventilation, surveying etc. As these fields move more into incorporating advanced electronics, new opportunities for electronics program completers will be experienced. So widespread are the applications for electronics that some authorities have suggested that electronics training become a core requirement.

There is also a recognized need to update the capabilities of our current workforce. The traditional technician needs to be aware of the new, technical advances. Some studies suggest that the technical knowledge base will double within the next seven years. In such cases, the demand for retraining the current workforce is a viable market.

The environment is changing, and our approach to delivering instruction must also change. Our approach must keep pace with the technical changes occurring in the field. Courses must be offered convenient to those who are currently working in the field and in need of technical upgrades. The College may have to move into the credit-free or contract instruction arrangements for individuals not interested in a degree or certificate. For those who want to combine their work experience with college credit, the College needs to develop an assessment of prior learning and dovetail it into the credit offerings. We also need to do more to articulate the community college experience with advanced degree opportunities.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

Students in Electronics receive support services available to all other students. Central assistance is provided from the Office of Student Life and the student development personnel at the College. Counselors, job placement staff and academic tutors are available to assist with these students' needs. Other forms of student support come from: The Writing Center, which helps the student with writing exercises, and vocational support services, providing support through the Carl D. Perkins Act. Guest speakers are used to inform students of career and advanced educational opportunities and numerous field trips have been conducted of area industries to assist the students in exploring work options.

The associate degree program in Electronics includes a cooperative education experience as an elective course. Co-op occurs at a time when the majority of technical courses have been completed. This permits a capable student to enter the work environment competent to perform expected tasks. The faculty member in the program works with the students in establishing industry contacts and works with the student and employers in developing training objectives. Students receive a grade based on their work from an assigned supervisor at the co-op employer. The faculty member evaluates the student at least twice while he/she is at the job site and discusses the results with the employer as necessary. The co-op program adds a necessary "real life" dimension to the curriculum that could not be replicated in the classroom.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

The College has articulation agreements in Electronics with Dorchester and Kent County Public Schools. Unfortunately, there have been very few students who have availed themselves of the provisions in these agreements. The articulation agreements basically permit students to receive nine semester hours of college credit for their work in articulated programs.

Strengths: Having the ability to work together with the high schools in developing the articulation agreements permitted faculty to get together and discuss issues related to instruction. It permitted them to build trust in the sharing of resources. Instructional material was shared and faculty exchanged ideas about how to integrate the latest technology into the curriculum. The main strength of the articulated process is that it gave students advanced standing in the Electronics program at Chesapeake College.

Weaknesses: The number of students enrolling in Electronics programs at the secondary level declined in greater proportions to the number of students at the postsecondary level. This meant that there were fewer students who could take advantage of articulation agreements. It also meant that students were not completing instruction in Electronics to fill the available positions in the field. Part of the decline may have resulted from a lack of the basic, entry-level skills needed by students for successful matriculation in the program area. Electronics is a difficult subject, requiring a thorough understanding of algebra and trigonometry. Better counseling and promotion needs to happen in order to get secondary students to respond favorably to the program.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The program is administered through the Executive Vice President for Academic Services. Reporting to him is the Associate Dean for Business and Technology who has immediate supervisory responsibilities for the faculty in the program. The Coordinator of Engineering Technologies serves as a further reporting link. This person also assists with budget maintenance and routine administrative tasks, e.g., advisory committee meetings and scheduling.

Professional development opportunities have been plentiful in this program area. In the current fiscal year, the principal faculty member in this program has actively pursued professional development opportunities at workshops sponsored by Chesapeake College, a workshop at Trident Technical College in Charleston, SC, a workshop sponsored by Catonsville Community College, and independent courses sponsored by Heath-Zenith Educational Systems (a vendor/supplier of educational textbooks and products).

Faculty can request funding for professional development opportunities, including conferences and workshops. The College also funds institutional and individual memberships in professional organizations related to this discipline.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

Employers have been contacted on a frequent basis. Special visits have been arranged to area firms. In addition to visits by the instructor, field trips to area firms have involved the students. An annual field trip to the University of Maryland Eastern Shore's Technical Expo has given both faculty and students a rare opportunity to interact with the mainstream companies in the industry. This Tech Expo is well attended by area companies.

The advisory committee in electronics met twice last year and twice this year. They are very active and supportive of the efforts in this program. Among their recommendations for change was a call for more high-tech content and a tempered approach to general education requirements in the curriculum. It was the committee's opinion that the general education component must be directly related to one's career field preparation. The committee was supportive of establishing an Associate in Applied Science degree.

The committee members offer views from a wide and diverse segment of the electronics industry. This panel of experts come from the following businesses: Goddard Space Flight Center, Bendix Corporation, Airpax Corporation, Technitrol Corporation, Chesapeake and Potomac Telephone Company, K&L Microwave, Omnic Filters, and Westinghouse Corporation.

9. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

Many companies now require the AA degree as a condition of employment. Technicians with an AA degree have a distinct advantage over lesser accomplished co-workers when job promotion opportunities present themselves. Also, many senior colleges and universities now offer 2+2 programs for community college technical program completers. Advanced degrees in electronics offer new career directions for AA program completers.

It is highly recommended that these opportunities be stressed in promotional campaigns and be available to clients when they seek information about the Electronics program. In addition, establishing a network of institutions and industry personnel with the intent to develop a consortium of advanced-technical applications/workshops in electronics might provide schools (both secondary and postsecondary) and the faculty with an efficient and rich resource for maintaining current perspectives on trends in the field.

10. What action(s) does the college plan to take to address the above issues?

Chesapeake College is fully aware that the number of students enrolling in the Electronics program is declining. The decline is of great concern to the College and to the firms who need to employ electronic technicians.

Beginning in the fall semester 1991, the College will attempt to counter the declining enrollments by locating at least two courses at a site in Federalsburg (Caroline County). Certain firms in the Federalsburg area can benefit from an Electronics program. Caroline County boarders Delaware. The Southern part of Caroline County is actually closer to Delaware Technical and Community College (Terry Campus) than it is to Chesapeake College. Consequently, we are losing Electronics students to a competitor from another state. With the support of the Caroline County Economic Development Council and the Town of Federalsburg, Chesapeake College has already identified a site and developed a lease so that courses can be taken to Caroline County as a convenience to the area firms and part of our overall commitment to serve the constituents in our five-county area. Many parts of Dorchester County are also closer to the Federalsburg site than they are to the main campus located in Wye Mills.

The Electronics program is one that fits perfectly in the design of the tech prep concept. The College plans to develop a 2+2, tech prep program with local high schools. Plans are underway now to incorporate electronics instruction with basic instruction into a Principles of Technology course in high school. Special promotional material will highlight the Electronics program as one that can be articulated in a tech prep model. In addition, the tech prep plan the College develops with the high schools will contain a provision for students to enter into electronics training at the postsecondary level.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Dundalk Community College**

PROGRAM TITLE: **Retail Floristry**

PROGRAM HEGIS NUMBER: **5402-02** LEVEL OF AWARD: **AA/Certificate**

1. **Using entrant follow-up or admissions data, describe the goals of students who enroll in the program as follows:**

Educational Goals	Number	Percent
Courses Only	8	18
Certificate	23	51
Degree	9	20
Unknown/Blank	5	11
Personal Goals		
Exploration of new career field	13	29
Immediate job entry	14	31
Transfer	1	2
Upgrade skills for current job	4	9
Personal interest	13	29
Other/unknown/blank	0	0
Total	45	

Source: Office of Research and Grants; Fall 1990 Students.

2. **The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Submit additional information for at least 10 students from surveys of entrants and/or graduates. The surveys can be done by mail or telephone. Please present the results in a table comparable to the PDM student follow-up display. Salary data are not necessary.**

Number of Respondents	19	
Response rate		53%
Full-time job, directly related		0%
Full-time job, somewhat related		11%
Full-time job, not related		32%
Part-time job		21%
Transferred, not employed		0%
Seeking work, not employed		16%
Military/home responsibilities/other		20%
Total		100%

Transferred, regardless of employment	0%
Achieved personal goal	75%
Satisfaction with instruction in program	100%
Began new job after college	0%
Satisfied with employment preparation	83%

3. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

The Retail Floristry program is administered by a member of the full-time faculty who serves as the Program Director and teaches in the program. This individual is under the direct supervision of the Division Chairperson for Math/Science/Engineering and Technology in which this program is located.

The career programs at Dundalk Community College are evaluated on an annual basis through the review of information contained in items such as: SBCC surveys, program demographics, student evaluations, classroom observations and program administration reviews. Full-time faculty in the Retail Floristry program are eligible for staff development funds to attend professional seminars and conferences. In addition, the tuition reimbursement policy allows for support of continued graduate course work.

4. **Does your college have any articulation agreements for this program with local high schools or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?**

The College, as part of an overall articulation program, does have an agreement with the Baltimore County Public School System which provides for the award of college credit for course work taken as part of the vocational-technical floriculture program offered in the county. The obvious strength is the advanced standing awarded to high school students who matriculate into the Retail Floristry program. A weakness is the lack of students who participate.

5. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

Through the Advisory Board and the Cooperative Education Office, numerous contacts are made and maintained with area florists. Retail floristry shops of varying size are represented on the Advisory Board which has met twice during the past year.

As part of the DACUM process associated with a comprehensive program review, recommendations were made to alter course content and sequencing. It was also recommended that the College increase its recruiting activity by expanding the program to off-campus sites.

6. **What should be the role of the Retail Floristry program at your community college during the next five years? Consider the issue of preparation for entry-level jobs versus enhancement of skills for those already employed.**

The Retail Floristry program should continue to serve the needs of the local floristry industry and should be an integral part of our series of career programs during the next five years. The credit program will continue to prepare individuals for entry level jobs while an expansion of the credit-free offerings will be used to enhance the skills of those already employed.

7. **What action(s) does the college plan to take to address the above issues?**

The College plans to take the following specific steps to address the issues identified in the program evaluation request:

- Investigate employment issues related to students not pursuing employment directly in the field for which training has been completed.
- Implement the curriculum content and sequencing recommendations derived from the DACUM process.
- Increase the recruitment activities at the main campus and begin to offer courses at off-campus sites.
- Maintain contacts with employers through active participation in the Co-Op Program.
- Continue to monitor the quality of the program through existing internal mechanisms.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Essex Community College**

PROGRAM TITLE: **Computer Information Systems**

PROGRAM HEGIS NUMBER: **5103-01** LEVEL OF AWARD: **AA**

1. **While numbers of students enrolled in this program remain high, awards have shown a substantial decline since 1984. What factors account for this decline?**

   The businesses of today have experienced a tremendous growth in the use of technology in their record keeping/problem solving areas, so much so that every employee is required to be computer literate, not just the data processing staff. In the past if students were interested in taking computer classes they were immediately directed into making that their major. With the integration of computer courses in other curricula, students are now finding that they can major in a variety of different areas and still have the opportunity to develop computer skills.

   In addition, as more community college students are looking towards a four-year degree, they are choosing to take the general studies curriculum during their first two years.

2. **Using entrant follow-up or admissions data, describe the goals of the students who enroll in the program as follows:**

Educational Goals	Number	Percent
Courses only	97	25%
Certificate	61	16
Degree	211	56
Unknown/blank	11	3

Personal Goals	Number	Percent
Exploration of new career field	73	19%
Immediate job entry	65	17
Transfer	83	22
Upgrade skills for current job	114	30
Personal Interest	38	10
Other/unknown/blank	7	2
Total	380	

Source: Fall 1990 Registration Forms EOTW

3. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

Advisory Committee: The major source of advisement to the curriculum has been the advisory committee which meets yearly. The members, approximately 15, represent large businesses such as First National Bank, Baltimore Gas and Electric Company, AAI, IBM and Maryland Casualty; medium size businesses such as DP Associates and Road Net; and small businesses such as Reisinger and Associates and Computer Aid. In addition, the College conducts graduate employer surveys every two years to determine satisfaction of the program graduates. The following recommendations were the results of the last two advisory meetings.

Recommendations from the 1990 Meeting:

- Incorporate more user computer literacy into the courses in areas such as 4th generation languages and user involvement in project management and implementation. Design a follow up course to Computer Literacy to address these topics.
- Retain the current COBOL compiler but begin to discuss the new level.
- De-emphasize Report Writer and ISAM and make students aware of what they will encounter in their jobs.
- Upgrade LOTUS 2.1 to 2.2.
- Continue with dBASE III Plus.

Recommendations from the 1991 Meeting:

- Continue the development of Advanced Computer Literacy emphasizing the role of the user in effective business computer based systems.
- Develop a second semester of C Programming and determine the placement of the UNIX operating system in the curriculum.
- Integrate the hands-on use of relational data bases and SQL into the Data Base Management Course.
- Investigate the use of CASE Tools, keeping in mind that the industry has not yet established a standard for their use.
- Maintain current release levels of software and emphasize concepts, not just computer activity.

- Study the feasibility of installing Local Area Networks in the computer labs.

4. Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty current with advances in this field?

Administration: The CIS department is part of the Business and Management Division. A department chairperson coordinates the administrative responsibilities for the CIS program and reports to the Division Chairperson.

Program Evaluation: The CIS program is evaluated in several different ways:

- Annual evaluation of all course syllabi by faculty for currency and effectiveness.
- Annual Advisory committee meeting.
- ECC's Program Evaluation System (PES), five year cycle, the first in 1986 and the follow-up in 1991. A DACUM Workshop has been scheduled for spring, to review the curriculum.
- Semester instructor/course evaluations.

Professional Development in Data Processing: Each of the CIS full-time faculty has accepted the responsibility of remaining current in the rapidly changing field of CIS.

- Faculty regularly attend local graduate schools to take courses in such areas as Advanced Microcomputing, UNIX, C and Systems Design Tools.
- Several faculty consult with local businesses, developing software packages.
- Faculty regularly use self-paced tutorials to learn new software packages.
- Faculty are involved in professional organizations and regularly attend professional development seminars and meetings.

5. Does your college have any articulation agreements for this program with local high schools, four year institutions, or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?

As part of the articulation agreements that the Baltimore County Community Colleges have with the Baltimore County School System, Essex allows high school students to articulate up to 12 credits in the CIS program. The guidelines are clearly stated in a handbook that is published each year (College Credit for Prior Learning Through Articulated Programs). As part of the annual update and revision, the college faculty and administrators meet with high school instructors to review the articulation process.

ECC has a transfer coordinator who works very closely with the four-year institutions to assure that the transfer process is current and effective.

The articulation agreements encourage students to continue their education beyond high school and enable them to achieve their career goals in a more cost effective way. Although the agreement has been in place for several years, few students seem to take advantage of it. Future strategies will focus on increased exposure and marketing of the agreements.

6. **What should be the role of this program at your community college during the next five years, considering the issue of preparation for entry-level jobs versus enhancement of skills for those already employed?**

The role of the program should be threefold:

- Prepare the student for an entry level job in CIS.

  This will require that the program continues to offer a complete curriculum in such areas as programming in multiple languages, designing effective business computer based systems, using microcomputers and understanding the role of telecommunications in today's industries.

- Provide learning opportunities for the already employed professionals to assist them in their "life-long learning" goals.

  Courses such as microcomputer applications, operating systems, data base design, on line programming, C programming and telecommunications are in great demand by the already employed professional.

- Educate the non-professionals in the use of the computer for their particular jobs.

  Many of the microcomputer courses can be taken after the Introduction to Computers course, allowing the non-professionals to become more skilled in computer application.

7. **Make a value judgement about the quality of the program. Is program quality low? Satisfactory? Excellent?**

The quality of the program is excellent and this was attested to with the recent receipt of three awards from outside organizations that chose to recognize the CIS program. In 1989 and 1990 DPMA awarded the CIS Department with its Middle Atlantic Region Award for the most outstanding two-year curriculum in the Mid Atlantic states. In addition, in the Fall of 1990, the Maryland State Department of Career and Technical Education presented the department with a Distinguished Program Award.

8. **What action(s) does the college plan to take to address the above issues?**

The college recognizes that there has been a decrease in enrollment of actual CIS majors. However, FTEs have been augmented by a large increase in non-majors and returning professionals. The CIS department has recognized that its role has been changing and has developed offerings to meet the new needs of the community. The combined numbers of CLI/CIS enrollments are the same (if not greater than) the former CIS (DP) enrollments of the past.

As part of the evaluation process this semester, the CIS curriculum will be reviewed in a DACUM workshop. In light of career preparation and skills upgrading, the following issues will be addressed in the evaluation committee:

- High enrollments with low awards
- Articulation agreements
- Curriculum content
- Transfer agreements
- Action plan to implement the Evaluation Committee's recommendations.

As a result of the 1990/1991 advisory committee meetings, the following actions were taken: a new course in End User Computing was developed and added to the Spring 1992 schedule; an Advanced C Course will be offered in the Spring of 1992; the COBOL curriculum has been augmented with the use of a microcomputer compiler, and Report Writer has been de-emphasized; the release level of Lotus will be upgraded in Summer 1991; a new course in UNIX has been developed by Computer Science and will be included among the CIS offerings; an analysis of available educational tools in CASE technology is in progress to evaluate its place in the CIS 201 course; a new course in Harvard Graphics will be offered in Fall 1991; dBASE III Plus will be upgraded to dBASE IV in Fall 1991; SQL activities have been added to the CIS 209 course curriculum.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Frederick Community College

PROGRAM TITLE: Electronics Technology

PROGRAM HEGIS NUMBER: 5310-01 LEVEL OF AWARD: AA/Certificate

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows:**

Personal Goals	Number	Percent
Exploration of new career field	19	20
Immediate job entry	17	18
Transfer	11	12
Upgrade skills for current job	32	33
Personal Interest	4	5
Other/unknown/blank	11	12
Total	94	100

Educational Goals	Number	Percent
Courses only	14	15
Certificate	6	7
Degree	63	66
Unknown/blank	11	12
Total	94	100

Source: Admission data and student surveys.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

In 1989 our enrollment took a rather precipitous drop. While recovering somewhat in subsequent years, it is still below the maximum achieved in 1988. The best explanation at which we have been able to arrive, after conducting several informal surveys of our current Electronics students, is that there exists a general reluctance among students to enroll in technical courses. They are perceived to be too difficult or mathematical in nature. In addition, students in high school programs currently do not have sufficient math skills to move immediately into a collegiate electronics program.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

Perhaps the single most important trend at this time in the electronics industry is the widespread introduction or inclusion of computers into the workplace and home environments. Not only has the computer in itself become commonplace, but virtually all new industrial equipment, as well as a significant portion of high technology consumer items, now contain processors embedded in their design. In response to this we have introduced two new computer oriented courses into our curriculum over the past several years: Computer Architecture (EL-215) and Computer Hardware & Repair (EL-217).

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

The normal support services of FCC, such as career counseling, guidance, job referral, tutoring, etc., are available to all students including those in Electronics. In addition, the Electronics program manager meets individually with each new student each semester in order to provide personal advising. As a result of this personal interaction, we have achieved an improved retention rate among our Electronics students entering the program. Subsequent advising is done on a continuous, ad hoc basis throughout the student's tenure at the College.

We are currently implementing a work experience program with local electronics and computer companies within the county and hope to have the program operational in the fall. In addition, cooperative education is currently available to all students at FCC with evaluation done through learning contracts.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

Frederick Community College and the Frederick County Public Schools (FCPS) system currently have a number of articulation agreements, including an electronics agreement. The major weakness with the current program in relationship to the high school is the inability to bridge the mathematics gap in the high school vocational program to the college program. The College is currently working with the FCPS to develop a comprehensive 2+2 in Electronics.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The Electronics Technology program is administered by a program manager who is given release time to manage/recruit. The program manager reports directly to the associate dean responsible for the Science and Technology Division. The Electronics program is evaluated each semester by a program review committee established by the Dean of the College. This committee looks at enrollment patterns, employment patterns, curriculum, marketing, etc. and recommends action.

The program manager has two avenues for professional development annually. First, the College pays up to $800/year for graduate coursework. Second, the College pays a part of other professional development activities (conferences, workshops, seminars, etc.).

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

We have an active Electronics Advisory Group at FCC which meets twice a year. Eight companies are presently represented by the group, which includes members from the local power utility, two consultant organizations and several electronic device manufacturers. All major proposals and changes affecting the program are presented to the committee for discussion and recommendations. Many valuable suggestions have come from the group members, who have always been very supportive of our program.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

The most important aspect of the viability of the associate program in Electronics is its acceptability in industry. We have conducted several semi-formal surveys over the past few years of the technical industries in the county and found almost without exception the requirement for an appropriate associate degree as the minimum standard for electronic technicians.

9. **What action(s) does the College plan to take to address the above issues?**

The College has undertaken three projects which we hope will enhance enrollments in Electronics Technology:

- The development of a Tech-Prep program with FCPS. FCPS is changing their academic requirements which will close the gap between vocational students in Electronics and the skill necessary to be successful at the collegiate level.

- The development of a work experience program with area electronics firms.

- The development of new Electronics curriculum options which have been identified to have high regional labor demand.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Garrett Community College**

PROGRAM TITLE: **Environmental & Renewable Resources Technology**

PROGRAM HEGIS NUMBER: **5401-01** LEVEL OF AWARD: **Certificate/AA**

1. **Briefly describe how this program is administered and evaluated on your campus.**

   The program is administered by the Director of Technologies who reports to the Dean of Academic Affairs. Program evaluations are conducted by a curriculum development and review committee known as the Learning Enhancement Council (LEC). The LEC is comprised of six permanent members and several additional members depending on the curriculum or program under review.

   The Environmental & Renewable Resources Technology Program and its Construction Technology Option was reviewed by LEC in March and April 1991.

2. **What is the minimum number of students needed to offer a successful program?**

   The minimum number of students needed to offer a successful AA degree program is 13 full-time equivalent students.

3. **What factors account for a discipline cost that is much larger than the average for all of the College's disciplines?**

   High cost of program operation is attributed to low student enrollments and the commitment on the part of the College to operate programmatic courses which are low enrolled.

4. **Does the Environmental & Renewable Resources Technology program meet a clear and important need in the College's service area?**

   As a degree program the Construction Technology option under the Environmental & Renewable Resources Technology program does not serve an important need in the College's service area. Employment, promotion, and career advancement in the construction industry are not dependent on an AA degree.

5. **Make a value judgement about the quality of the program. Is program quality low? Satisfactory? Excellent?**

   The quality of the program is good. Qualified and experienced instructors teach the courses in the program, and student ratings of their educational experiences in the program range from 4.2 to 4.7 on a 5.0 point scale.

6. **What action(s) does the College plan to take to address the above issues?**

Garrett Community College recommends discontinuance of the AA degree program in Environmental & Renewable Resources Technology. The College requests permission to continue offering a Certificate program which would offer educational experiences in construction skills and basic business and computational courses.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Hagerstown Junior College**

PROGRAM TITLE: **Police Services**

PROGRAM HEGIS NUMBER: **5505-01** LEVEL OF AWARD: **Certificate/AA**

1. **What factors contribute to the low certificate, relative to AA, enrollment?**

   Over the past five years the importance of higher education to the police services employment field has increased significantly. Enrollment trends in the program reflect more pre-service students. These two factors account for greater interest in achieving the associate degree as compared with the certificate.

   Many of the pre-service students will transfer and begin work on the bachelor's degree upon completion of the associate degree for two reasons: because the degree is recognized as a criterion that exists with employment and because many of them will not have reached the age of 21 at the time of graduation with the AA. To be a sworn officer in most of the jurisdictions served by HJC, one must be 21 years old.

   In conclusion, the certificate has always been a recruitment tool designed to ease return to school for in-service personnel. Since there still are some individuals in this category, the certificate retains its value.

2. **What factors contribute to the recent rise in discipline cost?**

   There would appear to be several reasons contributing to the recent increase in discipline cost for police services. First, the full-time enrollment dropped off slightly in 1989. This realignment of enrollment patterns will have a negative impact on discipline costs. Second, as the program becomes more technologically focused, it has become necessary to purchase certain equipment to support program development. These purchases occur in a given fiscal year but the equipment will be used across several years. The discipline cost is affected directly in the year of purchase.

   The April 24, 1991, PDM does not contain discipline cost analysis for FY 1990. Since the full-time enrollment increased significantly as did the part-time enrollment and there were no significant changes in equipment or personnel during FY 1990, it is safe to assume that when the discipline cost analysis report is run, program costs will show a decline. Finally, it is important to remember that even with the increase, the discipline cost for this program was 10 percent below the college cost for all disciplines.

3. **The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Submit additional information for at least 10 students from surveys of entrants and/or graduates. The surveys can be done by mail or telephone. Please present the results in a table comparable to the PDM student follow-up display. Salary data are not necessary.**

Number of respondents	10	
Response rate		100%
Full-time job, directly related	30%	
Full-time job, somewhat related	10%	
Full-time job, not related	20%	
Part-time job	10%	
Transferred, not employed	30%	
Seeking work, not employed	0	
Military, home responsibility, other	0	
Transferred, regardless of employment	10%	
Achieved personal goal	50%	
Satisfied with instruction in program	90%	
Among full-time employees:		
Began new job after college	10%	
Satisfied with employment preparation	100%	

4. **Does your college have any articulation agreements for this program with local high schools or government agencies? If so, what are the strengths and weaknesses of such arrangements?**

Currently the college does not have an articulation agreement for this program with local high schools or government agencies. The program has been targeted as one of the candidates for inclusion in the college's Request for Grant to MSDE/DCTE for Tech-Prep Program Development. Since the field of study remains of interest to recent high school graduates, we consider the development of a tech-prep agreement to be significant. We will use the model recommended by DCTE in designing the agreement. It will be possible to report the relative success of the agreement to SBCC/MHEC during academic year 1992-93.

5. **Describe contacts you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

The advisory committee for the police services program is the most active at HJC. It meets three times during the academic year. One of the major responsibilities which the committee has is to review curriculum. During academic year 1990-91 the committee held two of its regular three meetings. At each of the two meetings it was the committee's opinion that the structure of the program was adequate to meet the employment needs of the criminal justice community in the college's service area.

The following organizations are represented on the administration of justice advisory committee: police chiefs from four city jurisdictions served by the college; Washington County Sheriff's Department; two representatives from the Maryland State Police; wardens of the three state prisons in Washington County; the Department of Parole and Probation; director of security from Hood College; faculty member from Frostburg State University's Hagerstown Center; the U.S. Department of Defense; Washington County State's Attorney's Office; the civilian administrator of the Washington County District Court; the chief of security for Washington County Hospital; and the special assistant to the Maryland Secretary, Department of Public Safety and Correctional Services.

Follow-up with the criminal justice community, both through the advisory committee as well as individual discussions outside the committee framework, suggests that the criminal justice field continues to grow in the college's service area. Particular areas of growth include private security, industrial security, and correctional services.

Since the program has been integrated with correctional services since 1988, graduates can select from police agencies, correctional agencies, or private security when seeking employment. Overall, the college will continue to scan the community carefully to determine what curriculum changes will be needed to keep the program aligned with the growing and changing community need.

6. **What should be the role of the Police Services program at your community college over the next five years? Consider the issue of preparation for entry-level jobs versus enhancement of skills for those already employed.**

Two factors are likely to have the greatest influence on the role of police services at HJC over the next five years. The first is the continued growth, particularly in the fields of private security and correctional services. Both project significant increases in the need for employees in this time frame.

Therefore, the college needs to be prepared to continue to train entry-level criminal justice employees. Many of these individuals, as stated above, are likely to transfer into a baccalaureate program until they are eligible for employment by the appropriate agency. Careful attention is being given to an articulation agreement with FSU's Hagerstown Center in the field of justice studies. This articulation agreement will be the career ladder for associate degree graduates from the college's program.

The second factor is the increased professionalization and certification requirements within the criminal justice field. Many of the agencies represented on the advisory committee report that in-service education is now becoming mandated. The college can provide such education both in the for-credit and noncredit areas. It is our preference where the individual does not possess the certificate or associate degree that the training be credit and lead to this credential.

Therefore, the college will continue to provide enhancement of skills for those already employed. In essence, the role of the program will be to deliver both pre-service and in-service development over the next five years.

7. **Briefly describe how the program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

The Police Services program is a part of the college's Behavioral and Social Sciences Division. It has a lead faculty member charged with curriculum development and maintenance of the advisory committee along with teaching. The division chairperson evaluates the lead teacher and the status of the program. He reviews the evaluation with the dean of instruction who also draws upon data from the PDM to determine the relative health of the program. This evaluation model is an integral component of the college's strategic planning process. Overall it has been in place for approximately five years and seems to meet the accountability needs of the college.

HJC is fortunate to have access to a great number of professional development opportunities for the faculty in the criminal justice field. The National Sheriff's Association is located in upper Montgomery County. The American Jail Association has its headquarters in Washington County. Washington, DC, with access to the Department of Justice and FBI training, is approximately an hour and fifteen minutes from the college. The faculty in the criminal justice program make use of all of these training opportunities on a regular basis.

Further, with the opening of the college's Advanced Technology Center, satellite in-service development using downlink capability has become a reality. For the past two years HJC has had a contract with the FBI to conduct ongoing professional development for agents from this region. Members of the college's full- and part-time faculty are permitted to participate in the training.

Finally, with the large correctional complex located in Hagerstown, ongoing training in the corrections field is a reality. Full- and part-time faculty have access to this training. Overall it is not difficult to keep full- and part-time faculty in the criminal justice field current with advances taking place.

8. **Make a value judgment about the quality of this program. Is the program quality low? Satisfactory? Excellent?**

A careful review of the April 24, 1991, PDM suggests that HJC's police services program is an excellent one. Eighty percent of the students have achieved their personal goal. One hundred percent are satisfied with instruction in this program, and one hundred percent are satisfied with their employment preparation. Further, the program is operating at a cost 10 percent below the average cost for all disciplines at HJC. Finally, the program has experienced a 38 percent enrollment increase between 1989 and 1990. College faculty and administration will do everything possible to insure that these trends continue.

9. **What action(s) does the College plan to take to address the above issues?**

Assessment of the question provided by SBCC indicates that the following actions are required if HJC is to maintain its police services as an excellent program. Careful attention will be paid to cost data to insure that the program continues to be cost effective. Work will be undertaken as a part of the MSDE/DCTE tech-prep grant to develop and monitor an articulation agreement for this program. As a part of the strategic plan, the college will conduct formal and informal environmental scans to insure that the curriculum remains relevant and the balance between in-service and pre-service development reflects the needs of the college's service area. Finally, members of the college's faculty and administration will continue to encourage cooperative professional development for full- and part-time faculty with the various criminal justice agencies in the college's service area.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Harford Community College**

PROGRAM TITLE: **Nursing, Registered**

PROGRAM HEGIS NUMBER: **5208-01** LEVEL OF AWARD: **AA**

1. **What factors account for declining awards in this program? At what level does the College expect the awards to stabilize?**

   The program graduates two classes of students per year. The following illustrates the number of awards for this program over the past four fiscal years:

   FY 1988 - **51**
   FY 1989 - **34**
   FY 1990 - **42**
   FY 1991 - **52** (anticipated)

   The decline of awards in FY89/FY90 is directly related to the declining program enrollments during the two previous fiscal years. This decrease in enrollment is reflective of a nationwide phenomena which occurred during the same period. Program interest and enrollments began to increase in FY90 with the trend continuing into FY91. The Spring 1991 program enrollment is 141 contrasted with the Fall 1988 enrollment of 84. It is anticipated that this enrollment trend will continue into FY92 with a corresponding increase in the number of awards granted. It is projected that the awards will stabilize at a level of 65-75 annually by the end of FY92.

2. **What factors account for a discipline cost per credit hour that is much higher than the discipline cost per credit hour statewide, and rising much faster than the average discipline cost per credit hour at the College?**

   Discipline cost per credit is directly influenced by salaries of faculty who have extended longevity with the program. Of the seven full-time faculty, five members have longevity exceeding 14 years. Two of these faculty each have 23 years of experience with the program.

   Discipline cost per credit at the College is also impacted by the faculty-student ratio of 1:8-10 in the clinical nursing settings. These ratios are required by the State regulatory agency and the affiliating clinical agencies.

Other factors which contribute to discipline cost include: faculty travel to widely dispersed clinical facilities; the cost of teaching all nursing courses each semester to accommodate two enrollment periods per year; the cost of instructional media, equipment and supplies for nursing skills instruction in the campus laboratory setting and the impact of inflation upon these costs. Funds for supplies and equipment to support campus laboratory instruction for both the ADN and PN programs are incorporated into the budget for the ADN program. This factor artificially increases ADN program costs while having the reverse effect on the PN program costs.

Assessed on a program basis, the program contributes FTEs to other disciplines that would not be evident without the nursing program (i.e. Anatomy and Physiology, Chemistry, and Microbiology).

3. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

This program is administered and coordinated by the Director of Nursing Studies who also has responsibility for the administration of the Practical Nursing program at the College. The Director of Nursing Studies reports to the Vice President of Academic and Student Affairs through the Dean of Technical and Career Education.

As part of Middle States Accreditation Evaluation, the College is developing a comprehensive program review plan which will include all curricula. In addition, the Associate Degree Nursing program has developed a master plan for evaluation that encompasses annual review of the curriculum, faculty/instruction, students, clinical facilities, and instructional support. This plan supports the College's policy and procedure for evaluation of faculty and instruction.

Professional development for the faculty is facilitated by the annual allocation of funds for this specific purpose. The funds have been adequate to permit faculty to participate in professional development activities within the geographic region. Each year, the Teaching Learning Center of the College sponsors several professional development programs which permit faculty the opportunity to remain current in pedagogical trends.

4. **Does the College have any articulation agreements for this program with local high schools? What are the strengths and weaknesses of such agreements?**

The College has no articulation agreements for this program with local high schools. Discussion has taken place regarding articulation of the Practical Nursing program with the public schools through a Tech Prep agreement.

5. **Describe contacts that you have had with employers about the curriculum and the need for the program. How often has the program advisory committee met during the past year, and what changes or revision were suggested by the committee?**

The course coordinators meet with representatives of the respective clinical agencies at the close of each academic year, more often if the situation dictates. At these end-of-year wrap-up session, opportunities are provided for faculty and agency staff to discuss strengths and areas of needed improvement encountered during the course of clinical instruction. The Director of Nursing Studies confers with agency representatives throughout the year in the course of clinical schedule development and during contract negotiation. Discussions include the implementation of the curriculum in the clinical practice setting and feedback from the agency specific to the clinical affiliation. During the course of the academic year, clinical agency representatives are invited to the College to discuss professional employment opportunities and recruit students for nursing service positions.

The advisory committee is made up of representatives from the affiliating clinical agencies as well as program graduates and other nurses from the community. The Nursing Advisory Committee meets at least annually. The focus of this last session was three-fold: 1) the discussion of nursing leadership/management competencies essential for entry level positions for the ADN graduates, 2) discussion of the continuing education needs of registered nurses in the county, and 3) information regarding the progress towards approval for ANA certification of the continuing education offerings through the noncredit division of the College. An outcome of this session was the curriculum development of nursing content related to the ADN role of manager and coordinator of care. This curriculum content was implemented last fall.

6. **Despite a plethora of local and statewide initiatives to address a serious nursing shortage, many hospitals are still reporting substantial number of vacant positions. What is the current situation in your part of the State?**

A telephone inquiry of the two community hospital nurse recruiters on 4/15/91 revealed the following information with regard to full-time and part-time positions available for registered nurses:

- One agency reported no openings for full- or part-time positions, although nurse pool applications were being accepted;
- The other community agency reported four full-time positions, six part-time positions, and applications accepted for nurse pool positions.

The nurse recruiters cited decreased in-patient census as the major variable impacting current employment outlook.

7. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in this field, what would it be?**

The ADN program is an educationally sound preparation for entry level to the profession. The program should be marketed to prospective students on the basis of:

- o Accessibility
- o Affordability
- o Availability of resources and strategies to meet individual learning needs
- o Responsiveness to changing career goals through the availability of articulation agreements
- o Record of accountability to the competency measures of the State licensing requirements
- o Placement of program graduates
- o Ability of the program to respond effectively to changes in technology related to the practice of nursing.

To meet the nursing care needs of the community, it is imperative to maintain the ADN as the entry level to the practice of registered nursing.

8. **The College has a successful Practical Nursing program. What percentage of the graduates of this program go on to pursue an AA degree in nursing? What steps has the College taken to encourage students to continue their education beyond the Practical Nursing Certificate?**

The Nursing Department developed an internal articulation agreement 13 years ago to facilitate Practical Nursing mobility into the Associate Degree Nursing program. Since that time, 11.1 percent of the College's Practical Nursing graduates have enrolled in the Associate Degree Nursing program to pursue an associate of arts degree in nursing.

The internal articulation agreement is similar to the statewide Articulation Model for PN to ADN, with the same basic assumptions and procedures. Students who meet the articulation criteria are eligible for advanced placement admission with credit for 13.5 ADN credits, specifically: Fundamentals of Nursing, Medical-Surgical Nursing I, and Maternal-Infant Nursing. The students participate in a transition module to bridge the gap between the PN and ADN curriculums. The module has both cognitive and psychomotor curriculum content.

The Department is continuing to facilitate educational mobility with recent PN program modification which involved deletion of the Integrated Basic Sciences course in the PN curriculum and addition of Preparatory Chemistry and Anatomy and Physiology I and II. This modification removes barriers to educational mobility that previously existed. Implementation of this modification is in progress for the Fall admission class. The ADN program continues to expand and develop the transition module to respond effectively to student and curriculum needs.

9. **Make a value judgement about the quality of the program. Is the program quality low? Satisfactory? Excellent?**

The quality of the program is judged to be excellent based on the following outcome measures:

- o Responsiveness of the program to changes in the competencies necessary for entry to practice;
- o Percentage of students who are successful with the NCLEX-RN on first attempt;
- o Maryland Board of Nursing Continuing Approval (Site Visit for program review completed Spring 1991);
- o National League for Nursing Accreditation (Site Visit for reaccreditation completed Spring 1991);
- o Employment placement rate of graduates;
- o Enrollment in ADN to BSN completion programs.

The quality of the program has been judged as excellent in the follow-up questionnaires received from graduates and area employers.

10. **What action(s) does the College plan to take to address the above issues?**

The College plans to:

- o Continue financial support of the program and the professional development of the faculty;
- o Increase funding for equipment and other campus laboratory resources;
- o Continue to facilitate the articulation of practical nurses to the Associate Degree Nursing program;
- o Continue to support and facilitate the Associate Degree Nursing to Baccalaureate Degree Nursing articulation for its graduates;
- o Continue to review, and revise as indicated, the curriculum to maintain currency with competency requirements for entry level nursing practice.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Howard Community College

PROGRAM TITLE: Electronics Technology

PROGRAM HEGIS NUMBER: 5310-01 LEVEL OF AWARD: AA/Certificate

1. **How are students using the Electronics Technology program at your College? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows:**

Personal Goals	Number	Percent
Exploration of new career field	24	39
Immediate job entry	8	13
Transfer	20	33
Upgrade skills for current job	8	13
Personal interest	1	2
Other/unknown/blank	0	0
Total	61	100

Educational Goals	Number	Percent
Courses only	29	48
Certificate	7	12
Degree	19	31
Unknown/blank	6	10
Total	61	100

The data provided above show what the students actually checked on their Fall 1990 admissions/registration forms. Observing the students in both the labs and the classrooms leads us to believe that most students seem to want to obtain a job in some sort of technical field or want to upgrade their skills in a job they already have. There is a very small group that would like to obtain a four-year technical degree, but the overwhelming majority want a high-tech job upon receiving a certificate or associate degree. Occasionally there are students who simply take a class or two to learn more about some specialized high-tech topic.

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

Credit enrollment at Howard Community College in Electronics Technology has been fairly stable. This can be shown by examining the enrollment data starting in the Fall of 1985.

	FT	PT	Total
Fall 1990	10	51	61
Spring 1990	10	59	69
Fall 1989	7	60	67
Spring 1989	24	61	85
Fall 1988	6	62	68
Spring 1988	19	49	68
Fall 1987	5	71	76
Spring 1987	8	44	52
Fall 1986	6	50	56
Spring 1986	6	62	68
Fall 1985	7	49	56

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

George Heilmeier, a Texas Instruments executive, has stated that the fastest moving high-tech areas for the 1990s will be Telecommunications, Automotive Electronics, Manufacturing Technology, and High Definition TV. We can add Computer Networks to that list. HCC is planning to seek industry aid for the courses in the Electronics Technology-Telecommunications option. Courses have been created and some hardware and software has been purchased for both a sequence of courses in Manufacturing Technology and Networking. Courses in Consumer Electronics, which may include High Definition TV and Automotive Electronics, have been discussed as future offerings. It should be noted that whenever a list such as the above is presented, the College must, of necessity, consider cost. Electronics equipment, especially trainers, are not inexpensive. This year we have redesigned many of the courses in the Electronics Technology curriculum to provide students with courses which are more efficient and effective. The courses will also use and train students with the best available equipment we can design or purchase.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

Our Special Services, Counseling and Co-op area all provide support for our students. Each student can apply for one hour of free tutoring per class per week. There are counselors for the learning disabled and specialists available to talk to and aid the students.

The Counseling Center provides help in study skills, test taking skills, time management, and note taking. There is career counseling available so that students can see if they are really suited for the job that they are seeking by an examination of their values and beliefs, family history, and past grades.

Co-op has been added as an option to the redesigned Electronics Technology curriculum. We have discovered that technical co-op programs may have to be developed internally by the technology area to make it effective for the students and to maintain a supportive relationship with participating industry. Our current co-op setup is designed to train students to write a resume to help them find their own job. In some cases this takes a good deal of time and may prevent students from reaching their graduation goal. Students may find it easier to pursue another option.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

The College does have an articulation agreement with the Howard County School of Technology. Students from the Howard County School of Technology may receive up to 10 college credits in Electronics courses.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The Electronics Technology program is administered by the chairperson of Science and Technology. The program was evaluated and redesigned for the Fall 1991 semester. Input was received from the advisory committee which includes a faculty member of the Electronics program at the Howard County School of Technology, a faculty member of a sister community college, and a number of industry representatives. Changes are constantly being made in the advanced courses as faculty at HCC learn of new advances in the field.

Faculty training and professional development are encouraged in order to keep abreast of the advances in the electronics area.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

The College had a series of breakfast meetings during the previous academic year. High ranking executives from companies in Howard County were invited to these meetings.

The goals of the meetings were to introduce businesses to the new high technology facility and discuss our programs at the College. It was mentioned that they could perhaps help their employees by encouraging them to update their skills through enrollment in classes taught at HCC. Lastly, they were reminded that their companies may be able to take a tax deduction through the donation of some equipment to the college. We feel that these goals were somewhat accomplished.

The advisory committee has met once this year. The members who attended that meeting gave excellent suggestions dealing with the changes in both the program and the courses.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

There must be a change in the negative image technical skills have in Howard County, the State of Maryland, and the nation. We are told that in Europe and Japan, high-technology employees are professionals. The military service uses the same technique to promote their programs and recruit quality people. Too many semi-skilled jobs are currently labeled as "technical." The word "technical" means "blue collar" to many people and that means one cannot make it in the "professional" world. The exact opposite is true. Engineers may design the new circuitry but the technicians make it a product for the consumer and repair it when it is broken. The exacting, detailed knowledge associated with technical fields is essential to our economy and to the competitiveness of our products. In order to attract new students to the Electronics Technology programs, we need to market this idea to the general public, the schools, and industry.

9. **What action(s) does the College plan to take to address the above issues?**

The College has addressed the above issues by taking the following actions. First, starting Fall 1991, the redesigned courses and programs will take effect. Second, there is a High-Tech Expo being planned for summer, 1991. This is part of a follow-up to the activities which took place last year. Its goals are to introduce the community to the high-tech facility, to highlight our high tech programs which include Electronics Technology, and to conduct special programs for people such as high school students and individuals who are interested in career changes. Additionally, we have initiated a series of information sessions for potential students who are interested in high-tech areas. These sessions will be well advertised in local newspapers.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Montgomery College**

PROGRAM TITLE: **Business Administration Transfer**

PROGRAM HEGIS NUMBER: **4970-01** LEVEL OF AWARD: **AA**

1. **What factors account for an enrollment-to-awards ratio that is more than twice the State average?**

   Because our program is designed as a transfer curriculum, the majority of the students enrolled plan to continue immediately at a four-year college. Most view the AA degree itself as relatively unimportant. Their intent is to obtain a bachelor's degree, and they often wish to transfer as early as possible, even if it means not fulfilling all the requirements of the AA.

   Even though most students intend to transfer, often without a degree, the College is concerned about the enrollment-to-award ratio in this program. Because of concerns such as this one, the College conducted a comprehensive internal evaluation in FY'90. Details on this evaluation are presented in response to Question 2.

2. **What does the College consider to be a minimum number of awards for a successful program?**

   In the past, Montgomery College has not set a minimum level of awards for this curriculum. The primary purpose of this program is to prepare students to transfer to a four-year college or university, and the majority of students in the program intend to transfer. In fact, the proportion of students who indicate an intention to transfer has increased from 52 percent in fall 1987 to 60 percent in fall 1990. Also, many students transfer even though they do not indicate an intention to do so. A two-year degree in Business Administration provides very little employment opportunity for community college graduates. Consequently, most students will transfer without an associate degree since employment opportunities seldom improve with one.

   Even though transfer, with or without an associate degree, is the main emphasis of the program, the College has been concerned about the decline in the number of graduates (from 68 in FY'86 to 43 in FY'89). This was one of the reasons that led the College to conduct a comprehensive evaluation of the program in FY'90. As a result of this evaluation, several modifications are currently being implemented to improve the likelihood of students graduating.

For example, the program has decreased the number of credits required for the AA degree from 69 to 62-64. (Many students plan to transfer to a four-year college when they have completed 60-64 credit hours and do so without fulfilling the additional credit hours required for the AA degree.) In addition, the College has incorporated computer applications and business law courses into the curriculum, which are often required at transfer institutions. These aforementioned changes resulted from a careful review of the course requirements students need to fulfill to transfer successfully to a four-year institution as an incoming junior. The changes should prepare students for the academic challenges ahead and serve as incentives to students to persist to the completion of the two-year degree.

The number of graduates for FY'90 increased to 65, a level similar to the prior highest level in recent years (FY'86) of 68 graduates. Thus, the College anticipates that its actions will serve to keep this number high in the future. Given the changes to the curriculum, the College believes that its efforts will enable this program to remain strong. If we were to set a minimum number of graduates for the program, it probably would be around 20. (This represents about 3 percent of the total number of full-time students enrolled in the program for the past two years.) Hopefully, this issue will not be a concern in the future.

3. **What factors account for grades at the transfer college that are below the State average?**

The GPA data that were obtained from the SBCC Program Data Monitoring System suggest that Business Administration graduates from Montgomery College are not achieving at a level comparable to their counterparts at transfer institutions, statewide. This statement is based on 34 survey responses (68 graduates) for FY'86 and 21 responses (55 graduates) for FY'88. The number of responses may not be adequate to draw firm conclusions, but there are enough replies to raise some concern. However, the only data provided is for students with GPAs of 3.0 or more. The data exclude students with GPAs that would be considered academically successful (i.e., GPAs below 3.0 but above 2.0). The range of GPAs that were achieved by these students would have provided a better profile of their success and be helpful for comparison purposes.

Even though these data are limited, they raised concerns at the College. The actions being taken as a result of the internal evaluation noted in the response to question 2 will address this issue. Based on the available data, there is no explanation for fewer students achieving GPAs above 3.0. The College is concerned about students' performance and will continue to monitor student success data. In addition, discipline faculty will continue to work with students on an individual basis as needed to improve student success rates.

In order to do a better job of following students' success, the College needs more information on its transfer students from area colleges and universities. We are currently working with representatives from the Maryland Higher Education Commission to collect and be provided with information on students who transfer from our institution. This information should be forthcoming in fiscal year 1993 and will cover students who transferred through FY'92.

4. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in this field, what would it be?**

At the present time, there is no significant market for an AA in Business Administration as a terminal degree. Employers as well as students do not see the degree as an important credential for those pursuing a career in business. The bachelor's degree is seen as the minimum credential in this field. Therefore, one piece of advice we would give to our community college colleagues is: encourage your students to see the AA degree as an important stepping stone to the bachelor's degree. Reinforce this by developing strong direct transfer articulation agreements between your college and the four-year institutions.

5. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

The Business Administration transfer curriculum is administered on a Collegewide basis through the cooperative efforts of three instructional deans and discipline faculty coordinators representing the three campuses. Course and curriculum maintenance is effected by the coordinators under general guidelines appropriate to the discipline and requirements of major transfer institutions.

The curriculum is evaluated on a regular basis by members of the faculty at all three campuses. This curriculum was revised in 1990 and the revised program was published in the 1991-92 Montgomery College catalog. One major change was to reduce the total number of credit hours necessary for the AA to increase the number of degree seeking students and to expand transferability. Other changes were designed to incorporate computer applications and business law into the curriculum and to modify math requirements to conform with those of transfer institutions.

Faculty in the business administration program attend many professional and academic association meetings, conferences, workshops and seminars. In the past year, faculty have participated in programs sponsored by organizations such as the *American Institute of Certified Public Accountants, the Maryland Society of Accountants, The American Marketing Association, the American Economics Association, and the Association for the Advancement of Community College Teaching*. These programs allow faculty with CPAs to maintain appropriate accreditation and all faculty to remain current in the discipline and to keep up with developments in the business administration field. In addition, the business administration faculty participate in collegewide professional development activities. For example, in 1990 the Business Administration faculty focused on *Writing Across The Curriculum* through a series of workshops and information exchanges. This year-long activity helped the faculty to develop and assign appropriate writing projects to help students benefit from increased emphasis on writing in Business Administration courses.

6. **Does your College have any articulation agreements for this program with local high schools, four-year institutions, or governmental agencies? What are the strengths and weaknesses of such arrangements?**

Students completing the AA in Business Administration at Montgomery College meet the general education and first two-year business curriculum requirements at four-year business programs at schools in the University of Maryland system. In addition, the College has articulation agreements with many other four-year institutions. Examples are Norfolk State College and Middlebury College. Montgomery College and Trinity College, Washington, DC concluded a direct transfer agreement for the Business Administration curriculum in March 1991.

The development of the ARTSYS computerized articulation guide is a positive step in helping students and advisers plan appropriate programs of study for those planning to transfer within the University of Maryland system. Confusion or uncertainty about the transferability of individual courses due to curriculum changes in four-year programs is a weakness of articulation agreements in general.

7. **What action(s) does the College plan to take to address the above issues?**

Montgomery College will continue to implement changes and recommendations that resulted from the recent internal evaluation of the Business Administration program. The College will strive to keep the curriculum current to ensure successful transferability of its students to area colleges and universities, as well as monitor students' performance and their future plans as they move to other institutions and careers.

Of particular importance is the need to monitor the transfer plans and success of our students at UMCP, where the greatest proportion of our students initially intend to matriculate. To enter the business school at UMCP, students must have a specified minimum grade point average which often is raised because of the quality of students who compete for entry. By monitoring students' performance and curriculum content, the College hopes to increase their success rate to transfer and academic performance in the future.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Montgomery College

PROGRAM TITLE: Electronics Technology

PROGRAM HEGIS NUMBER: 5310-01 LEVEL OF AWARD: AA/Certificate

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program.**

Personal Goals	Number	Percent
Exploration of new career	17	12
Immediate job entry	24	16
Transfer	26	18
Upgrade skills	66	45
Personal interest	2	2
Other/unknown	10	7
Total	145	100

Educational Goals	Number	Percent
Take courses	26	18
Certificate	12	8
Degree	107	74
Total	145	100

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the state, and what explanation(s) do you offer?**

Faculty and Advisory committee members offer the following reasons why enrollments and the number of degrees awarded are declining in the field:

- Low status of technicians in Montgomery County
- Relatively low pay scale and high cost of living in Montgomery County make it difficult for technicians to live and work in the county
- Inadequate mathematical and scientific preparation of incoming students

- Student perception that the course of study is hard
- Fewer high school graduates than in the past
- Competition from proprietary six-month technical schools
- Lack of A.S. degree makes it more difficult for graduates to compete for positions with out-of-state candidates with the degree

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

In industry there is a trend toward extensive use of computer controlled application software in all phases of manufacturing. Electronics technology classes are using computers for analysis of electronic systems. One OMNI LAB automated lab test station has been purchased. P-SPICE, P-CAD, or CAD, and AUTOBOARDMAKER software are being phased-in to the program. Students use the software in the laboratory and it is used for demonstration during lecture.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

The College provides academic support for students through a Writing Center and a Math Center. Students can receive help on a walk-in basis. Counseling services are available to all students.

An Electronics Club was established in 1989. There have been several field trips and meetings with speakers from area businesses. The club was responsible for the repair of the College's radio transmitter.

The Bliss Society is an alumni organization of graduates of the Electronic Technology program. They provide an endowed scholarship for Electronic Technology students as well as an emergency loan fund. Each year the Electronic Technology student with the highest grade point average receives an award from the Bliss Society. The organization provides informal assistance to students seeking jobs.

The program does not include a cooperative education component. However, many students in the program are employed in related positions.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

The College does not have a 2+2 program in Electronics Technology, but through the Germantown campus there is a 2+2 program in Electromechanical Systems Engineering Technology which includes options in Electromechanical Technology, Computer-Aided Drafting, and Telecommunications Technology. Through this program students can earn up to 14 credits for selected high school credits taken at Watkins Mill High School.

The strength of this program is the rigorous academic program which is process and applications oriented and has the support of local business. The weakness of the program is that not too many students enroll because of the negative perception by parents and counselors of "vocational" programs. This weakness is recognized by the Maryland Higher Education Commission since the Germantown campus has a grant to enhance the image of technical careers and programs.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The program is located in the Physics Department at the Rockville campus. There is a department chairperson as well as a faculty coordinator who is responsible for planning and evaluating the program. The program is ABET accredited and undergoes periodic ABET accreditation review.

Faculty may request professional development funds and/or education assistance funds to attend conferences, workshops and seminars. An advisory committee, made up of 19 representatives of local business, meets with faculty on a regular basis.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

The Advisory Committee is made up of individuals representing private industry (Denro Corporation, Hughes Network Systems, Bechtel Power Corporation, IBM Corporation, Vitro Corporation) government (Department of Energy) and educational institutions (Capitol College).

During the past year, the advisory committee met twice, in May and in December. The committee has had several discussions on the need for an Associate of Science degree. Many committee members wrote letters and testified in support of permitting the award of this degree in Maryland. Committee members indicated that the lack of such a degree is a hinderance in bidding on government contracts.

The College has started to use the DACUM process to develop and revise its programs in the technologies. Phase I and II for the Microcomputer Repair Technician program have been completed and a DACUM is planned for the Electronics Technology program.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

The faculty and advisory committee in Electronics Technology do not support the Associate in Arts degree as a credential for those pursuing a career in Electronics Technology. It is believed that an Associate in Science degree is the most appropriate degree for those in Electronics Technology. This is supported by local businesses that do government contract work since the government contracts specify that the electronics technicians working on the contract have A.S. degrees. It is costly and time-consuming to ask for waivers to the degree requirement so that given a choice, local employers hire out-of-state candidates with A.S. degrees.

9. What action(s) does the College plan to take to address the above issues?

The College plans to revise the Electronics Technology curriculum using the DACUM process in order to make sure that it reflects the current needs and required knowledge of industry.

The College is committed to expanding the number of articulation agreements maintained with transfer institutions for students in this program since so many of them intend to transfer to a technology program at a four-year institution.

The College has taken and will continue to take a leadership position in support of the State of Maryland offering an Associate in Science degree. The Rockville instructional dean for the sciences is a member of the statewide task force reviewing the A.S. degree.

The College is planning to initiate a major recruiting plan focused on all technical education programs. Special attention will be paid to under-enrolled programs such as Electronics Technology which lead to high demand, high paying jobs.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **New Community College of Baltimore**

PROGRAM TITLE: **Business Administration Transfer**

PROGRAM HEGIS NUMBER: **4970-01** LEVEL OF AWARD: **AA/Certificate**

1. **A higher proportion of transfer students from this community college's program reported that their transfer programs were not related to this program than statewide. Additionally, a lower proportion from this college reported a direct relationship between this community college program and the transfer program than statewide. What factors may contribute to these discrepancies?**

The following table breaks down the data related to this issue for CCB and the statewide data for 1988 graduates and for CCB graduates in 1989 and in 1990:

Relationship of Community College Program to Transfer Program:

	Responding Graduates				
	CCB 1988	CCB 1989	CCB 1990	3-Years Combined	State 1988
Directly related	4	5	3	12	222
Somewhat related	4	4	-	8	63
Not related	1	-	-	1	15
Total	9	9	3	21	300

The question is predicated in the PDM data for 1988, which shows that 11 percent enrolled in a different field. While technically correct, it is difficult to regard this as a significant problem, given the small numbers in the population compared to the statewide total. Over a three-year period, only one of the 21 responding graduates from CCB reported enrolling in a field that was different from Business Administration. The resulting 5 percent is not much from the 4 percent reported statewide on the PDM.

For the same three-year period, 12 of the 21 (57 percent) CCB graduates reported enrolling in a field directly related to Business Administration. This compares to 74 percent statewide. Again, these percents are based on substantially different quantities. Nevertheless, factors contributing to why CCB graduates changed majors to a field "somewhat" related, rather than "directly" related, to Business Administration could include:

- Advisement provided at the transfer institution;

- Better employment opportunities perceived in slightly different fields; and

- Changes in occupational goals and objectives.

A lower proportion of our students transfer into the same program because many of the students change programs while enrolled at NCCB and have dual goals. Many of our students are taking courses in the Business Administration program because it satisfies their job requirements for a promotion. These students may change their majors often, completing the AA degree in Business Administration and taking a program that will meet the needs of their "new goals."

2. **What does the college consider to be a minimum acceptable transfer rate?**

Student success, as measured by the proportion of new full-time freshmen who have graduated from the college, transferred, or are still enrolled after four years. New CCB currently ranks 17th among the 17 Maryland community colleges on third variable, with a student success rate of 24 percent, compared to the state average of 43 percent. It is the goal of the college to rank in the top third of the Maryland community colleges on this variable.

Student transfer goal achievement, as measured by the proportion of graduates who transfer to a four-year college when that was their goal and by the proportion of transfer students who are in good academic standing at the transfer institution. The latter measurement will be taken in relation to the University of Baltimore, Coppin, Morgan, Towson, and UMBC, the four-year institutions to which the greatest proportion of the College's students transfer. It is the goal of the College to rank in the top third of the Maryland community colleges on this variable.

3. **What factors account for student loss of credits upon transfer that is greater than systemwide? For example, does the Business Administration transfer program at the college require courses not generally accepted at senior institutions or courses not applicable to the major at senior institutions? If yes, list the courses.**

Yes, the former Business Administration program included options that were not generally accepted at senior institutions as a program requirement. For example, BA 103, Business Math; BA 100, Introduction to Business; BA 225, Corporation Finance; and BA 226, Money and Banking. These courses were generally accepted at the senior institutions as free electives. Although these courses are applicable to the major at the senior institution, students were required to take other business courses.

Students also lose credits upon transfer due to the inconsistency in transfer policies among senior institutions. To assist students with this problem, freshmen are encouraged to make decisions regarding senior institutions during their first year at the college.

Additionally, a large number of our students are employed during the day and take a full academic load during the evening. These students frequently do not take advantage of College Transfer Day or the Special Orientation held for business students.

Many of our students register for courses on an exploratory basis. Once they declare Business Administration as a major, they have accumulated credits for self-enrichment that cannot be transferred as part of the Business Administration program.

Finally, many of our students are taking courses in the Business Administration program because it satisfies a job requirement for promotion. In such cases, completing the AA degree program and transferring to a senior institution become secondary.

4. **Briefly describe how the program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with new directions in this field?**

The Business Administration program is administered by the program coordinator and evaluated by the Dean of Business and Information Systems Division in consultation with the advisory committee. There are two faculty members and a program coordinator who assist with academic advisement. The Business Administration program coordinator revises and writes syllabi, reviews the program, makes recommendations for program changes, staffs classes, and evaluates teachers.

The business program coordinator meets with the college articulation personnel to stay abreast of program changes in the four-year institutions. The ARTSYS computer-based record of evaluation is used. There is a newly formed Business Administration Advisory Committee that played a vital role in helping us with our program revision. The new Business Administration program was approved by the advisory committee on April 26, 1991. The Business Administration Advisory Committee consists of various faculty members from Morgan, Coppin, University of Baltimore, UMBC, and Towson. The advisory board is scheduled to meet twice a year.

Professional development opportunities exist through workshops and seminars. Business Administration faculty members participate in state, regionally, and locally sponsored conferences and seminars. The Business Administration coordinator participated in the FIPSE Grant. This grant integrated the study of women into the Principles of Management course and include international studies in business, marketing, and management.

Business Administration advisors have attended articulation programs for the past two years at the University of Baltimore, which is one of the schools to which a large number of our students transfer.

Course syllabi have been updated and textbooks have been selected that include computer applications for problem solving, etc. All students are required to take a course in microcomputer applications. Workshops for faculty and staff members have been offered on various computer applications. Video tapes also are used. The college keeps abreast of the global changes through international small business lectures and conferences. Professional journals on high technology are provided.

5. **Make a value judgment about the quality of the program. Is the program quality low? satisfactory? excellent?**

The quality of the program is satisfactory based upon the evaluation of the Business Administration program by the Advisory Committee. In 1988, 44 percent of our students were extremely satisfied with the transfer program, and 56 percent stated that they were satisfied. One hundred percent of our students were satisfied with the program. Our students also reported that they achieved personal goals--100 percent in 1986 and 88 percent in 1988.

6. **What action(s) does the college plan to take to address the above issues?**

The college plans to improve student transfer goal achievement as measured by:

- The proportion of graduates who transfer to a four-year college when that is their goal;
- The proportion of transfer students who are in good academic standing at the transfer institution; and
- The proportion of fall entrants whose transfer goal is appropriate to the curriculum to which they are enrolled.

To accomplish this goal, the college has instituted a new advisement system that includes the following:

- An advisor is assigned to each student upon admission.
- The assigned advisor will follow the student until the student graduates.
- A transfer coordinator has been appointed to work with advisors, students, and the senior institutions.

Additionally, the college has improved the college-wide orientation program, and small group orientation sessions are held within the division for business majors. A new student success program has been established at the college to assist students in making career choices.

A major change in the business division is the newly formed advisory board with representation from the senior institutions who will review the Business Administration program.

The business program has been revised, also, to include a pre-business program followed by a core program of transfer courses approved by the senior institutions.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **New Community College of Baltimore**

PROGRAM TITLE: **Electronics Technology**

PROGRAM HEGIS NUMBER: **5310-01** LEVEL OF AWARD: **AA/Certificate**

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the program as follows:**

Personal Goals	Number	Percent
Exploration of new career field	9	13
Immediate job entry	18	26
Transfer	23	33
Upgrade skills for current job	9	13
Personal interest	6	8
Other/unknown/blank	4	7
Total	69	

Educational Goals	Number	Percent
Courses only	10	15
Certificate	9	13
Degree	50	72
Unknown/Blank	-	-
Total	69	

Source: Office of Institutional Research

2. **Electronics programs at many colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the state, and what explanation do you offer?**

Many of the major electronics employers in Central Maryland are defense contractors. With the end of the **cold** war, defense funding has been increasingly reduced. As such, employers have been reducing employment levels and simultaneously looking at new products and markets for the future. These employers anticipate that in 2-4 years they will be hiring technicians to a level that exceeds the current defense oriented workforce.

The New Community College of Baltimore has been showing a moderate increase in enrollment for the past 3 years although still well below the levels of the late 70's and early 80's. Underfunding and the poor image of the college in the past have contributed to the decline of a number of programs. With new leadership and state support, the general health of the college and the Electronics program are improving. Another factor affecting enrollment is the poor image of technology careers by students and their parents. The current NCCB and Baltimore City Schools initiative in Tech Prep will include an early career awareness and exploration at the middle school level to change the prevailing image.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the college responding to these trends?**

As more and more of our technology and our society becomes computer and silicon chip dependent, the greater will be the need for a workforce trained in these areas. The increased computing power and reduced cost of these chips are driving the market toward more consumer, educational, business and health oriented computer controlled products. As such, students in electronics must be more computer literate by knowing the basic theory of computers, computer interfacing and the elements of computer programming.

The New Community College of Baltimore is responding to these factors in a number of ways. The new leadership at the college has designated this program for enhancement by infusing additional resources into the program including money for equipment, labs and personnel. A coordinator will be assigned to the program to aid in recruitment, retention and advisement. The department has already developed new courses in computer maintenance and repair, networking, and data communications. The option in telecommunications in being revised to more closely reflect current trends in voice, data and video information flow. The department is also upgrading the computer interfacing course and studying the development of a computer programming course specifically for electronics students. Additionally, new options in industrial electronics, consumer equipment repair and biomedical instrumentation are being considered.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for electronics students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

The New Community College of Baltimore has an extensive Center for Educational Services that provides remediation and tutorial services for all students at the college. Student Services at the college provides guidance and counseling and a retention specialist specifically assigned to help technology students.

Each student in the Electronics program is assigned a faculty advisor/mentor to help with course selection, registration, course problems, internship and employment opportunities. The Cooperative Education Office helps students obtain internship placement, but this program has been only moderately successful. The college's new instructional plan being developed for the Maryland Higher Education Commission will place a greater emphasis on cooperative educational experiences for all career programs.

5. **Does the college have any Electronics 2+2 programs or articulation agreements with local high schools? If so what are the strengths and weaknesses of such arrangements?**

The college does currently have articulation agreements with three Baltimore City high schools and a number of private technical schools. The number of students coming to us from the high schools has been somewhat limited due to lack of adequate program marketing, while we have had reasonable success with the transfers from the private technical schools.

The strengths of these arrangements have been the cooperation of the faculty involved to identify competencies and match them to courses at the college level so that students entering NCCB do so with advanced placement. The weaknesses have been in marketing the concept not only to the students but to the parents and the counselors as well.

The New Community College of Baltimore and Baltimore City Public Schools are in the process of developing a strong Tech Prep program based on Applied Academics in science and math at the high school level. This program is one of the college's major goals thus reflecting the new administration's support for the concept. The existing electronics articulations are being updated to reflect industry needs and curricular changes in the high schools. Early career awareness and exploration, staff awareness and development, and program marketing are all key components of this joint venture.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help keep faculty current with advance in the electronics field?**

The program is administered under the Divisional Dean for Applied Technologies. There is currently a coordinator assigned for all technologies one of which is the Electronics program. With the enhancement of the program and the hiring of two new personnel, it is anticipated that a coordinator, exclusively for electronics, will be assigned in the Fall of 1991. The faculty, students, advisory committee and the administration participate in the evaluation and improvement of the program through meetings, evaluation forms, and goal setting and review. The faculty meets on a weekly basis and the coordinator provides the Dean a monthly report of program activities.

The college's commitment to enhance this program has provided money for faculty attendance at a number of single and multiple day workshops on new and emerging technologies and teaching strategies. As part of the Tech Prep initiative, we will be soliciting input from business and industry to help us keep abreast of technology advances and employment needs.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the advisory committee met during the past year and advice or recommendations for change did the committee provide?**

During the current academic year, the advisory committee has not yet met. The staff has spent a tremendous amount of time dealing with enhancement of the program, faculty evaluations and hiring of new faculty. The coordinator has been informally meeting with individual advisory members to keep them updated and to receive input from them. The recommendations from the previous meeting of the advisory committee have been translated into new courses in the Fall 1990. Additionally, as part of the Tech Prep initiative, the college and Baltimore City Schools are meeting with industry wide groups such as the Baltimore Advisory Council for Vocational Education and the Private Industry Council seeking their support and input by identifying area employment and training needs. These groups are being asked to become part of a consortium to make Tech Prep work.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the state on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

First I would tell them to market the community college concept for its low cost and more individualized attention due to lower student to teacher ratios. Next I would simply tell them what employers are telling us. Companies are interested in students who not only have technical skills but can also read, communicate (orally and verbally), think creatively and problem solve. Students need to learn how to learn. Only an AA degree can help provide a student with these skills.

9. **What actions does the college plan to take to address the above issues?**

The college is already implementing its plan to address these issues. We are enhancing and upgrading the program through new equipment, new courses, a new lab, additional personnel and more intense recruiting. Through the Tech Prep program, the college will help create a smooth track of studies beginning in the ninth grade and culminating in an AA degree from NCCB without loss of time or credit. The college is meeting with groups from business and industry to begin identifying employer needs in training, skills and competencies. We are already looking at possible new program options in industrial electronics and biomedical instrumentation.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Prince George's Community College

PROGRAM TITLE: Criminal Justice Technology

PROGRAM HEGIS NUMBER: 5505-01 LEVEL OF AWARD: AA/Certificate

1. **Using entrant follow-up or admissions data, describe the goals of the students who enroll in the program as follows:**

Educational Goals	Number	Percent
Courses only	65	21
Certificate	52	16
Degree	199	63
Personal Goals		
Exploration of new career field	36	11
Immediate job entry	66	21
Transfer	177	56
Upgrade skills for current job	25	8
Personal interest	10	3
Other/unknown/blank	2	<1
Total	316	100

Source: Prince George's Community College
Office of Institutional Research and Analysis

2. **What factors account for the low placement of students in full-time jobs related to their field of training?**

Figures indicating low placement of students in full-time jobs may be the result of the fact that many of the program graduates surveyed were already employed full-time in the criminal justice area when they began taking classes for career advancement. Due to the nature of the employment area, some graduates may not be eligible for employment because of earlier life styles which involved criminal records, etc. Additionally, there has been a recent cut in funding for some departments not allowing them to fill vacant positions.

3. **How could student satisfaction with preparation for employment be strengthened?**

Continued coordination with local police agencies and the Maryland Police Training Commission for current needs in law enforcement and corrections education will enable instructors and program coordinators to constantly modify and develop instruction that will satisfy student needs and employer requirements.

4. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

The Criminal Justice Technology instructional programs are organizationally located within the Management Department of the Business and Management Division. Program administration and development is directed by a program coordinator provided release time from the basic teaching load.

Full-time and adjunct faculty are evaluated on a regular schedule including student assessment, peer and immediate line supervisor observations, and self-evaluation and professional development activity summary. Professional enhancement opportunities are provided through college-wide professional development programs, membership in professional associations, and close working relationships with program certification agencies.

5. **Does your College have any articulation agreements for this program with local high schools or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?**

The College currently has in place articulation agreements with the county police and corrections agencies, as well as the municipal police entry-level training program.

The strength of current articulation agreements lies in the motivational factor for police and corrections officers to continue the education in a directed degree program instead of simply obtaining random courses to meet yearly professional development requirements.

A weakness in the type of articulation agreements utilized is that the agreement is between a specific agency's training program and the College. Students with similar training from another agency must have their record evaluated and considered individually--a time-consuming task for the designated evaluator.

6. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advise or recommendations for change did the committee provide?**

Curriculum and program need has been consistently assessed and updated as a direct result of regular contact with municipal, county and state police and corrections agencies as well as the State Training Commission.

Organizations represented on the advisory committee are: municipal, county, and state police and corrections agencies, police and corrections training commission, county circuit and district court systems, police and corrections professional associations, and related four-year educational institutions.

The advisory committee meets at least twice a year formally and then informally throughout the year as needed. A major development which resulted directly from advisory committee input was the development on the PGCC campus of the Prince George's Municipal Police Academy program.

7. **What should be the role of the Criminal Justice program at your community college during the next five years? Consider the issue of preparation for entry-level job versus enhancement of skills for those already employed.**

The credit-based Criminal Justice Technology program does not typically provide entry-level training, but according to students who have found employment, it makes the entry-level training easier and more meaningful. More often students are currently employed as police and corrections officers or young people not yet old enough to be employed as police officers. They accumulate professional credentials for career development and promotion.

8. **Make a value judgment about the quality of the program. Is program quality low? Satisfactory? Excellent?**

The CJT program would receive a rating of excellent. This evaluation is based on several factors:

- Continuous curriculum evaluation and update based on current job requirements
- Employment of adjunct faculty currently employed as professionals in the areas in which they teach
- Active Advisory Committee which keeps program coordinator and division up-to-date on current job market needs

9. **What action(s) does the College plan to take to address the above issues?**

The College and Criminal Justice program plan to continue to provide the best and most up-dated instruction in the areas of criminal justice pertinent to the job market. Direct contact with the students, employers and advisory committee indicates satisfaction with the program and its outcomes for the students.

PROGRAM EVALUATION REPORT
1990

COLLEGE: **Prince George's Community College**

PROGRAM TITLE: **Electronics Technology**

PROGRAM HEGIS NUMBER: **5310-01** LEVEL OF AWARD: **AA/Certificate**

1. **How are students using the Electronics Technology program at your college? What are their personal and educational goals? Using data from the most recent admissions/registration forms, describe the goals of students who enroll in the Electronics program as follows.**

Personal Goals	Number	Percent
Exploration of new career field	139	49%
Immediate job entry	50	18
Transfer	40	14
Upgrade skills for current job	36	13
Personal interest	16	6
Other/unknown/blank	-	-
Total	281	

Educational Goals	Number	Percent
Courses only	184	65%
Certificate	39	14
Degree	58	21
Unknown/blank	-	-
Total	281	

Source: Office of Institutional Research and Analysis

2. **Electronics programs at many community colleges are suffering from a decline in credit enrollment at the very time that businesses are reporting a serious shortage of trained personnel. Many explanations have been given for this situation. What is the situation in your part of the State, and what explanation(s) do you offer?**

At Prince George's Community College, the number of students in Electronics Engineering Technology declined through 1989. The numbers then started moving upward but are still below those of the mid-80's. In our county, we attribute the decline to a number of factors:

- o Decline in the number of graduating high school seniors;
- o An increasing minority population, which has traditionally been underrepresented in technical occupations;

- o Increasingly poorer preparation in mathematics by high school graduates;
- o Channeling of high school students into either traditional four-year colleges or directly into the workforce. High school students are not "aimed" at two-year technical programs;
- o Continued underrepresentation of women in the field.

3. **What trends in the rapidly changing electronics field do you see as most critical to the future direction of this program? How is the College responding to these trends?**

Practicing electronics technicians are experiencing an ever-increasing integration of the computer into all aspects of their daily work. Electronic technicians now use personal computers or workstations to design circuits and printed circuit boards. They use computer-based diagnostic software to repair equipment and the computers themselves. Technicians routinely use computers for word processing, data bases, and spread sheets. Even if they are classified as electronics, not computer, technicians, they're expected to know MS-DOS and how to install and modify computer systems.

The college continues to respond to these changes by integrating computer work into non-computer classes and by adding special computer classes for electronics technicians. In addition to programming in Pascal, students now learn to do mathematical analysis with MathCAD, draw schematics with Orcad, and analyze circuits with Micro-cap. Instructors now expect computer-prepared lab reports and analysis.

We have also added an additional troubleshooting class that allows students to use newer and more sophisticated diagnostic equipment.

4. **What types of academic and student support services are available to students enrolled in the Electronics Technology curriculum? Are any special academic advising and/or other support services provided for Electronics Technology students? Does the program include a cooperative education experience? If so, how would the faculty assess that component of the program?**

Students in the Electronics Technology program participate in a number of support programs available to the general college population. Free tutoring is available to all students through the tutoring center, with specific tutors available in mathematics and electronics. Some students are able to participate in the award-winning Black Student Retention and Minority Student Retention programs; other special populations receive help through the Vocational Support Services program. We have had a cooperative education program for many years, and the faculty all welcome it as a way to meet employers at their businesses and see what job needs we must meet.

5. **Does the College have any Electronics 2+2 programs or articulation agreements with local high schools? If so, what are the strengths and weaknesses of such arrangements?**

The college does not have a working articulation agreement with the county school system, but does have one with TESST, a local proprietary electronics school. We feel that the high schools' vocational program prepares students well for our program but does not include enough mathematics to warrant credit within the program. Students from TESST can receive up to 20 credits toward our electronics degrees but usually are lacking in their math backgrounds.

Under a just-received MHEC Community College Challenge Grant, the college will provide a "2+2+2" path from the high schools to Prince George's to the B.S.E.T program at Capitol College.

6. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in the electronics field?**

The Electronics Engineering Technology program is part of the Computer and Engineering Technology Division, one of seven divisions reporting to the Vice President for Instruction. There is no administrative separation of "Career" vs. "Transfer" programs at PGCC. The program is evaluated externally by the TAC/ABET national accrediting body and is one of only two electronics associate degree programs in the State to receive TAC/ABET accreditation. Our program has also been recognized nationally by the Tau Alpha Pi (National Honor Society for Engineering Technologies) with the award of full chapter status. Internally, the college uses employer surveys and graduate surveys, along with suggestions from the program advisory board. The college's Office of Institutional Research and Analysis also evaluates programs on a routine basis.

In the area of professional development, faculty keep current via employer contacts through: co-operative education; part-time faculty who are working professionals in the field; the advisory board; membership in IEEE (Institute for Electrical and Electronic Engineers) and ASEE (American Society for Engineering Education); and the many lectures and workshops through ASEE, Goddard Space Flight Center in Greenbelt, and elsewhere.

7. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

We routinely meet employers via co-op and are often contacted by employers seeking graduates. These employers are generally quite specific about their needs. Our advisory board spans employers of all types: the very small (Ashwood Engineering); medium (Interferometrics, Stanford Telecommunications, American Computer and Electronics); and the very large (Digital Equipment, U.S. Government at Ft. Meade). The advisory board meets at least once a year, with more frequent informal contact with individual members.

At the most recent meeting (April '91), the board members recommended the following:

- Provide increased computer awareness and use (PC and MacIntosh) for all students in all electronics courses;
- Offer computer repair courses with no prerequisites for students with no electronics background. These courses could be used as "hooks" to bring students into the electronics programs;
- Offer short courses aimed at updating technicians already in the field;
- Offer courses on-site at large employers, such as NASA's Goddard Space Flight Center;
- Require more technical writing in all courses in the curriculum.

8. **If you were asked to give one piece of advice to your community college colleagues throughout the State on how to promote the Associate in Arts degree as an important credential for those pursuing a career in Electronics Technology, what would that advice be?**

Community colleges should promote the AA degree in electronics technology as a educational option with relatively easy entrance requirements that leads to high-paying, interesting jobs in two years, or a BSET degree in four years.

9. **What action(s) does the College plan to take to address the above issues?**

The college is addressing enrollment issues by taking the following actions:

- Our ongoing Community College Challenge Grant provides support for a "2+2+2" articulation project among the county high schools, Prince George's Community College, and Capitol College.
- The College is presently in the process of applying for a "Tech Prep" grant through DCTE. This proposal will include strategies to channel high school students into technology programs at PGCC.

- The college is presently writing a "Sex Equity" grant proposal specifically aimed at attracting and retaining women in engineering technology and computer information systems programs.

- We continue to have informational and recruitment visits at area high schools, especially ones with electronics programs, and middle schools.

- We are investigating offering courses at NASA's Goddard Space Flight Center.

The college is addressing course/curriculum content issues by taking the following actions.

- Per the advisory board recommendation, we continue to increase the amount of computer use in non-computer classes.

- Per the advisory board recommendation, we are currently developing a no-prerequisite computer repair course.

- Per the advisory board recommendation, we are attempting to include writing as a component of all technical courses.

PROGRAM EVALUATION REPORT
1990

COLLEGE: Wor-Wic Tech Community College

PROGRAM TITLE: Hotel-Motel-Restaurant Management

PROGRAM HEGIS NUMBER: 5010-01 LEVEL OF AWARD: AA

1. The number of respondents to the follow-up surveys is inadequate to draw a conclusion about the program. Submit additional information for at least 10 students from follow-up surveys of entrants and/or graduates is necessary. The surveys can be done by mail or telephone, with results presented in a table comparable to the PDM student follow-up display. Salary data are not required.

	Graduates*
Number of Respondents	12
Response Rate	46%
Full-time job, directly related	58%
Full-time job, somewhat related	8%
Full-time job, not related	0%
Part-time job	17%
Transferred, not employed	0%
Seeking work, not employed	17%
Military, home responsibility, other	0%
Transferred, regardless of employment	58%
Achieved personal goal	100%
Satisfied with instruction in program	100%

*The survey represents graduates from the years 1986 or later.

2. Using entrant follow-up or admissions data, describe the goals of students who enroll in the program as follows:*

Educational Goals	Number	Percent
Courses only	2	8%
Certificate	4	16%
Degree	18	72%
Unknown/blank	1	4%

Personal Goals	Number	Percent
Exploration of new career field	8	32%
Immediate job entry	11	44
Transfer	2	8
Upgrade skills for current job	4	16
Personal interest	0	0
Other/unknown/blank	0	0
Total	25	100%

*The survey represents graduates from the years 1986 or later.

3. **Briefly describe how this program is administered and evaluated on your campus. What ongoing professional development opportunities exist to help faculty keep current with advances in this field?**

The person responsible for the administration of the HMR department is titled the department head. This individual is responsible for teaching most of the HMR classes, hiring adjunct teachers in the program, developing and monitoring the department budget, and other various administrative duties. The department is evaluated each year by the Vice President for Academic and Student Affairs. In addition, students in every HMR class have the opportunity to evaluate the course and instructor.

In professional development, the department head is presently pursuing a doctorate in Curriculum and Instruction at the University of Maryland. In addition, he attends semiannual professional development days offered by the college, industry trade conventions, and the national convention of the Council on Hotel, Restaurant, and Institutional Education.

4. **Does your college have any articulation agreements for this program with local high schools or governmental agencies? If so, what are the strengths and weaknesses of such arrangements?**

Wor-Wic Tech is presently completing additional articulation agreements with Somerset, Wicomico, and Worcester county vocational programs. The intent is to articulate the vocational food service programs with the Principles of Food Preparation course offered by the college.

5. **Describe contacts that you have had with employers about the curriculum and the need for the program. What types of organizations are represented on the advisory committee? How often has the program advisory committee met during the past year, and what advice or recommendations for change did the committee provide?**

- Attended the off-season monthly meetings of the Ocean City Hotel/Motel/Restaurant Association.
- Invited numerous experts in the hospitality field to participate in class activities as guest lecturers.
- Conducted a number of formal and informal discussions with employers in the process of creating daily course content.
- Maintained current knowledge of industry needs by thoroughly reading national and regional trade publications as well as attending industry trade conventions.

- The program advisory committee is comprised of representatives from many aspects within the hospitality industry. These primarily include owners and managers of large and small hotels and restaurants. In addition, the committee includes an educator from Worcester County Vocational School, adjunct teachers in the Hotel-Motel-Restaurant Management program, students presently in the program, and a director for food service facilities at Salisbury State University.

- The committee meets twice yearly, once in the fall and once in the spring of the school year. This year the committee has focused on marketing the HMR program and introducing a human resource management course to the curriculum.

6. **This program was identified for a qualitative evaluation several years ago. What actions were carried out by the college in response to that evaluation, and what was their effect on the program?**

- Continued effort on hands-on training as well as competency-based education.

- Continued development of an on-site kitchen laboratory.

- Increased use of hospitality industry experts within the surrounding area.

- Upgraded state-of-the-art computer program for the front office program.

- Curriculum changes reflecting the present needs of the industry.

- Continued use of the physical resources the two-county area has to offer.

- The implementation of various teaching methods reflecting the participation of the department head in an educational doctorate program at the University of Maryland.

7. **What should be the role of the Hotel-Motel-Restaurant Management program at your community college during the next five years? Consider the issue of preparation for entry-level jobs versus enhancement of skills for those already employed?**

The role of the HMR program should continue to be focused in three areas. A number of graduates elect to continue their education in pursuit of a bachelor's degree. Continued effort should be directed toward a productive education while in the program as well as a smooth transition into the four-year program.

For numerous students, this program represents the (at least temporarily) culmination of their education. Every effort will be expended to insure that these students are prepared to enter the industry in an entry level management position or higher. The third reason for taking the WWTCC HMR program is for the enhancement of hospitality skills. This represents a sizable number of the program's students. The college will continue to upgrade the program and communicate with the industry to insure that participants in the program will obtain skills that can be applied to the present industry.

8. **What action(s) has the college taken to promote the statewide designation of this program?**

Most of the effort has been directed toward obtaining students located on the Eastern Shore but from outside the two-county area. For example, articulation agreements are being finalized with Somerset County and the department head has been in contact with instructors and counselors from the surrounding counties.

9. **Make a value judgement about the quality of the program. Is program quality low? Satisfactory? Excellent?**

The quality of the program should probably be judged as satisfactory with many aspects of the program having attained the excellent level. For example, the instructor in the Principles of Food Preparation course is assisted by expert chefs from the surrounding area. Many of these chefs are considered the best in the area and masters in their field. In addition, state-of-the-art software computer programs are used for the Front Office Procedures course.

The HMR program also utilizes commercial food service equipment, and the student and instructors have a fine selection of video tapes and books to use as support materials. Finally, the department head and program committee members evaluate and refine the curriculum on a yearly basis to maintain a program of instruction that is teaching material relevant with the present state of the hospitality industry.

10. **What action(s) does the college plan to take about the above issues?**

- During the 1991-1992 school year, the HMR program has been singled out for a special marketing push by the college.
- The program plans to continue its use of inviting industry experts to appear as guest lecturers.
- The program department head will continue to attend local and regional industry meetings and trade shows as well as attend statewide and national professional development seminars.
- The program department head will continue to pursue a doctorate of Curriculum and Instruction at the University of Maryland.

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